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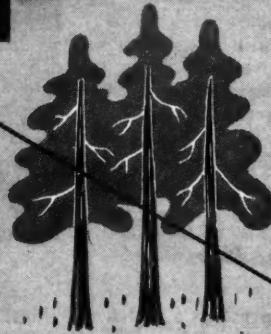
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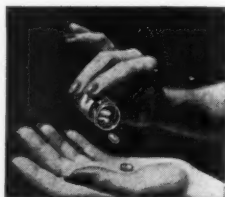


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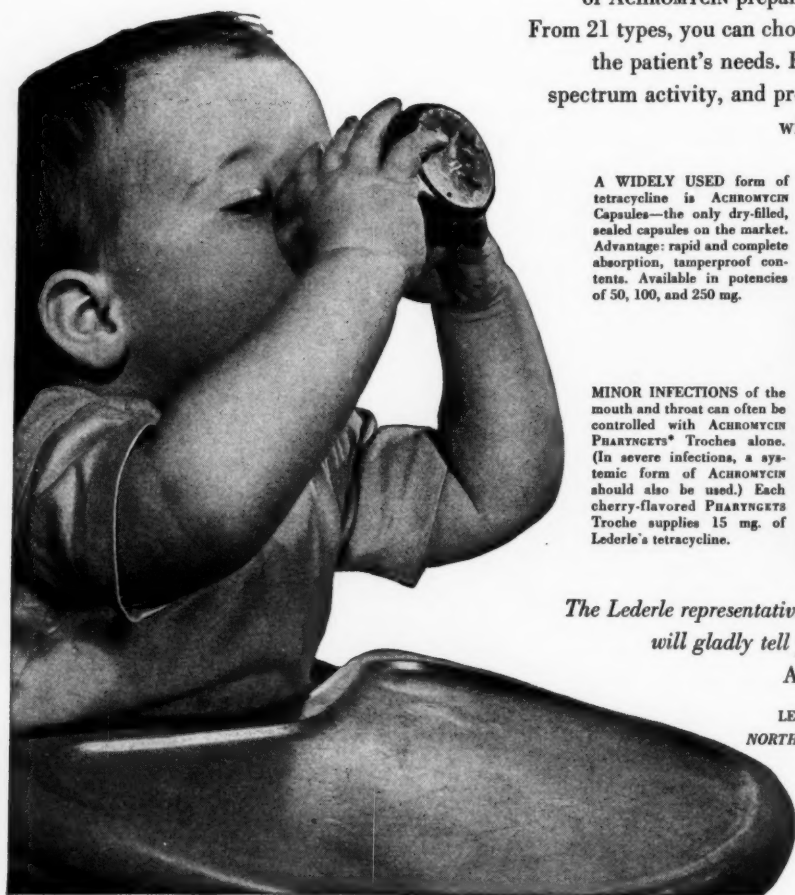


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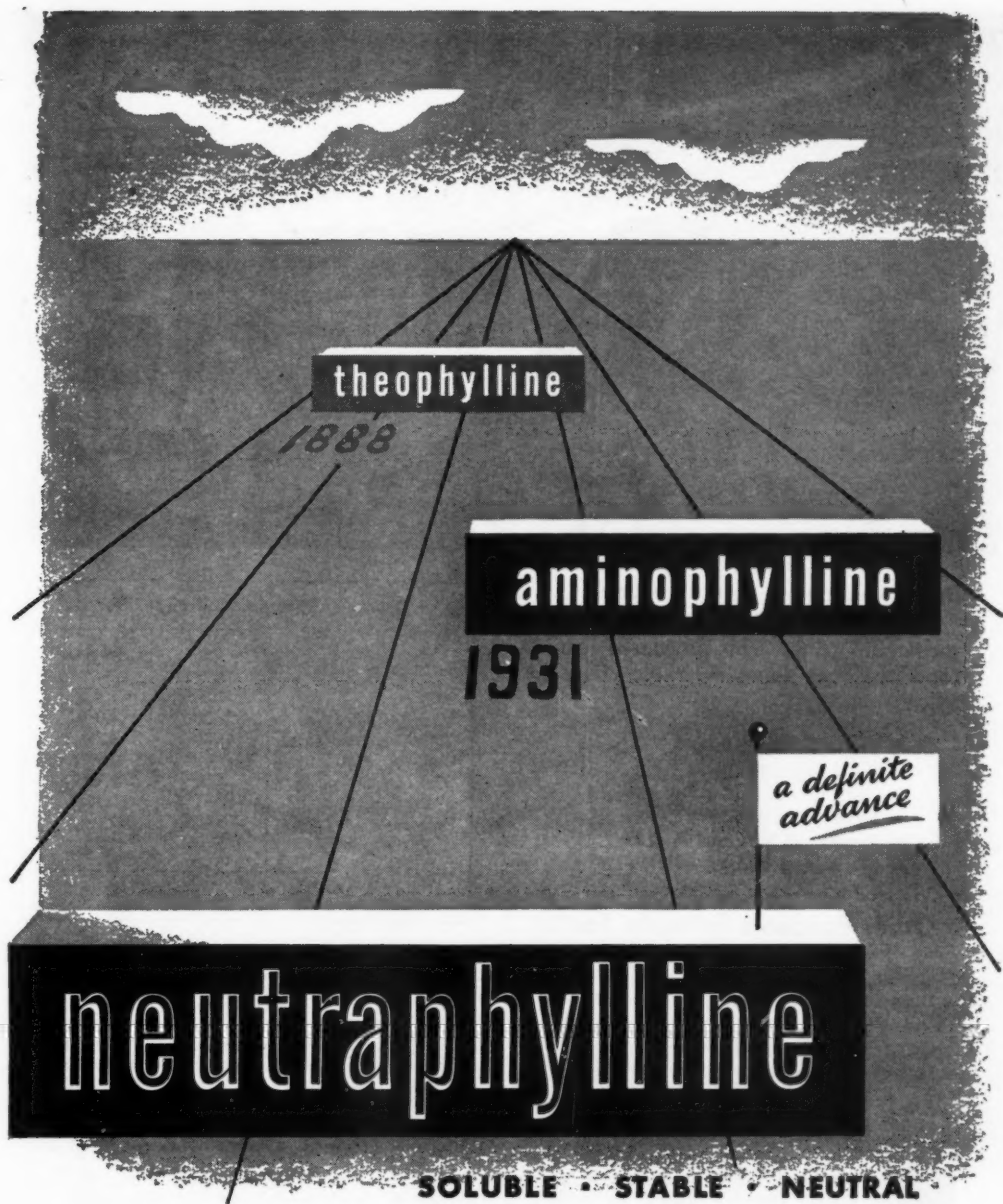
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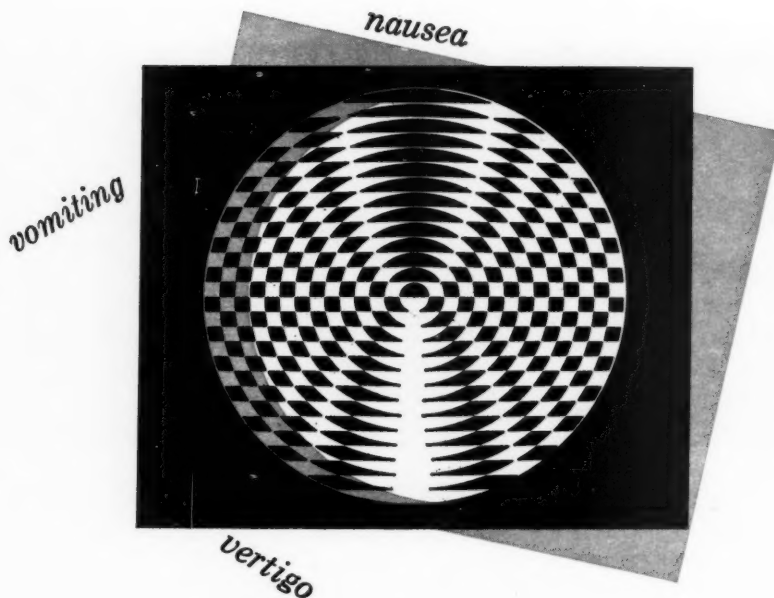
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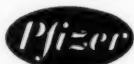
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BRITISH DRUG HOUSES

The Manitoba Medical Review

Vol. 36

APRIL, 1956

No. 4

Surgery

Surgical Lesions of the Biliary Tract*

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Fortunately, it is now true that a high percentage of patients who have benign lesions of the biliary tract obtain eminently satisfactory results after surgical treatment, provided, of course, that the clinical diagnosis has been accurate and complete and that the surgical procedure has been well performed under favorable circumstances. It is true, unfortunately, that for one or several reasons, most of which are preventable, certain patients who have benign surgical lesions of the biliary tract do not have a satisfactory postoperative result. Accordingly, at this time, some of the factors which may lead to unfavorable results, as well as certain problems relating to surgical lesions of the biliary tract, will be discussed.

The Silent Gallstone

Most everyone will agree that surgical procedures are indicated when gallstones cause colic or significant dyspepsia, but the problem which frequently confronts the clinician, as well as the surgeon, is how to advise the patient who possesses the so-called "silent gallstone." I refer to cholelithiasis which, for example, is discovered accidentally, perhaps when roentgenographic studies are being made for other reasons. Opinions differ as to the advice that should be given the patient under these circumstances and range from a consistent recommendation that operation should never be advised to the diametrically opposed opinion that operation should always be advised. As usual, probably the best advice lies between these two extreme viewpoints and is based on findings in the individual patient.

The important question from the patient's point of view is What will happen if the gallstones are not removed? This question cannot be answered with certainty for a single patient but a study made by Comfort, Gray and Wilson¹ sheds some light on it. For a period ranging from 10 to 20 years these authors followed a group of 112 patients who were found to have completely symptomless gallstones. Dyspepsia of greater or less severity, thought to be caused by a diseased gallbladder, developed in 30 of these patients; in 21 of them biliary colic

developed and in five of these 21 patients jaundice also developed. Thus in a total of 51 patients (about 46 per cent) symptoms developed and in 24 of these patients cholecystectomy was subsequently performed; 3 of the 24 patients died giving a much higher mortality rate than is usually associated with cholecystectomy for chronic cholecystitis with stones.

In general it is true that the longer a disease process has existed the greater is the likelihood of complications. It is known that this is true as regards the existence of gallstones. Thus, complications such as carcinoma of the gallbladder, cholecystoenteric or choledochenteric fistula, intestinal obstruction caused by a large gallstone, pericholecystic abscess, acute cholecystitis, choledocholithiasis, jaundice, cholangitis, and other complications which increase the seriousness of the disease process as well as the operative risk occur more frequently when gallstones have been present for a prolonged time than when they have existed for a brief period only. Although some of these complications, such as gallstone ileus, might seem rather rare, this has been found to be the cause of intestinal obstruction in 1.9 per cent of some 19,000 cases of intestinal obstruction collected from the literature by McLaughlin and Raines². In spite of the fact that cancer of the gallbladder is relatively uncommon, it is true that the majority (approximately two thirds) of patients who have cancer of the gallbladder also have cholelithiasis³. Many of these patients have experienced symptoms referable to gallstones many years prior to the development of carcinoma. A very real hazard of postponing operation for cholelithiasis is that, with advancing age, the chance is increased for development of serious disease elsewhere in the body, which also might increase the risk of operation. Furthermore the incidence of acute cholecystitis is definitely higher in older than in younger patients.

Although the data of Comfort, Gray and Wilson¹ and the other considerations mentioned do not afford a definite answer as to whether operation should or should not be advised for a given patient who has symptomless gallstones, they at least indicate that such a patient has approximately a 46 per cent chance of having symptoms develop during the next 10 to 20 years after the gallstones are discovered and that the risk of operation, if it becomes necessary, becomes greater the longer it is postponed. Advice for or against operation should always be dependent on findings in the individual patient. While it is difficult to be

*Read at the meeting of the Manitoba Medical Association, Winnipeg, Manitoba, Canada, October 25 to 27, 1955.

†The Mayo Foundation, Rochester, Minnesota, is a part of the Graduate School of the University of Minnesota.

dogmatic, it seems reasonable to advise operation for the symptomless gallstone in the relatively young patient who is in good general condition. In contrast, it appears equally reasonable to advise the older patient who may have significant disease elsewhere that operation might be deferred until symptoms develop. A single large gallstone is equally as apt to cause symptoms as are multiple stones of average size, although contrary opinions have been expressed. It seems appropriate to perform cholecystectomy whenever gallstones are discovered during the course of an abdominal operation for some other condition, provided this can be accomplished without some unusual risk to the patient or perhaps the necessity for a second abdominal incision.

Causes of Unsatisfactory Results After Cholecystectomy

As mentioned previously, the removal of a diseased gallbladder which contains stones and is the cause of definite symptoms is followed by a most satisfactory result in the large majority of patients. Among women the mortality rate of cholecystectomy for chronic cholecystitis with stones should not be more than 1.0 per cent. The unsatisfactory results which are encountered in some patients result from one or more causes which are related to the following factors: diagnosis, which may be incomplete or inaccurate; an operation which is inadequate or technically faulty or one which is performed without adequate preoperative preparation if this is indicated; some type of postoperative complication, or persistent or recurrent disease in the biliary tract or liver. One should guard against all such possibilities in order to obtain the highest number of good postoperative results. Some of these causes of unsatisfactory results are common to any abdominal operation and others are related particularly to surgical procedures performed on the biliary tract.

Obviously, removal of a diseased gallbladder only relieves symptoms caused by the cholelithic disease. Thus, in the differential preoperative diagnosis, if symptoms are attributed to the diseased gallbladder which actually result from functional causes, renal disease, duodenal ulcer, diaphragmatic hernia or some other abnormality, cholecystectomy cannot be expected to bring relief. Not infrequently one may hear a patient who has been advised to have a diseased gallbladder removed state that she has a friend "who had her gallbladder out and isn't any better." This type of unsatisfactory result is usually accounted for by "expecting too much" from the operation. To avoid such an occurrence complete and accurate preoperative diagnosis is essential. Examination of the patient should be complete, even though the presence of gallstones is recognized at once. The patient who has symptoms which arise from sev-

eral causes should be informed that only those symptoms which are caused by the gallstones will be relieved after cholecystectomy.

Passing from diagnosis to operation in considering reasons for poor results after cholecystectomy, one must mention the attitude held by some members of the medical profession which is indicated by the remark "just a cholecystectomy." Such a remark suggests a simple commonplace procedure which is regarded as an operation that might be performed by almost anyone. Just because something is done frequently does not mean that it should be performed lightly and without adequate preparation on the part of the patient or the surgeon. In the first place, cholecystectomy is of course a major surgical procedure that requires thorough preoperative evaluation of the patient from the viewpoints of indication for operation, risk of operation and need for appropriate preoperative measures to help assure a smooth postoperative course. Technically, it is true that cholecystectomy may be quite a simple operation provided extensive disease is not present in the biliary tract, anatomic abnormalities are not present, anesthesia is good, exposure is adequate and unexpected difficulties do not arise. Unfortunately none of these conditions can be predicted with certainty prior to operation. The discrepancies which may exist between the clinical symptoms and signs of cholelithic disease and the extent and activity of the pathologic process as found at operation are well known. An edematous, thick-walled, distended, adherent and subacutely inflamed gallbladder may be encountered unexpectedly at the time of operation and tax the ability of the most experienced surgeon in its safe removal. Occasionally, under such circumstances, one may need to resort to cholecystostomy, partial cholecystectomy, retrograde cholecystectomy or some special technic in order to conclude the operation in the safest manner¹.

Anomalies of the biliary tract and blood vessels at the hilus of the liver are relatively common and failure to recognize their existence may lead to serious consequences. Recently I have seen two patients in each of whom the right hepatic duct joined the cystic duct instead of the left hepatic duct. Obviously, the existence of such an abnormality must be appreciated if serious injury to the right hepatic duct is to be avoided. Not infrequently the right hepatic artery may be intimately associated with the cystic duct. Therefore, any surgeon who operates for disease of the biliary tract must be familiar not only with anatomic abnormalities which may be encountered in this region but also with pathologic physiology resulting from hepatic disease and diseases of the biliary tract.

Trauma to the common duct is one of the most serious technical faults that leads to serious

sequelae and results in stricture. This will be discussed later. Inadequate operation may result in failure to explore the common duct in the presence of choledocholithiasis, incomplete removal of stones from the common duct, failure to recognize an ampullary tumor, overlooking of stones in the stump of the cystic duct and other equally serious oversights. Adjacent viscera as well as other structures within the abdomen should always be carefully explored for disease processes. Not long ago I saw a patient who complained of dyspepsia. A cholecystogram revealed gallstones. The gallbladder was removed but her symptoms persisted; in fact, they became worse. Subsequent examination performed 6 weeks later revealed a large carcinoma of the gastric cardia which required a second operation for its removal.

Roentgenologic Studies of Biliary Tract

Visualization of the biliary tree by roentgenologic methods is a subject of current interest because more methods of studying the biliary tract roentgenologically are available now than were available in former years. Cholecystography has been an established procedure for many years, and, when properly performed, it affords accurate information in a high percentage of patients. There are, of course, pitfalls that may lead to inaccurate interpretations and faulty conclusions. Not infrequently it may be advisable to repeat an examination of this type for one of various reasons. The surgeon also must remember that no single test always gives reliable information and in certain cases stones may be present in a normally functioning gallbladder and may not be visualized roentgenographically. On the other hand, visualization of the gallbladder may not be obtained although there is no primary disease in the gallbladder. The surgeon as well as the roentgenologist should always examine the roentgenograms in any case of suspected cholecystic disease. Roentgenograms made with the patient in the lateral decubitus position may be helpful in visualizing calculi in the gallbladder that otherwise might be overlooked. A cholecystogram made at the time of an attack of gallstone colic or shortly thereafter may reveal abnormal findings which are not apparent subsequently.

Most controversy regarding cholangiography concerns its use at the time of operation. Reports in the literature for the most part seem to indicate two rather sharply separated groups of surgeons: those who practice this procedure and consider it helpful and those who do not use it and consider it unnecessary and inaccurate. Surgeons who have had experience with this procedure state that it is helpful in determining the need to explore the common duct for stones, ductal tumors, sphincteritis and other abnormalities. Cholangiography also is used after stones have been removed

from the common duct to determine whether or not any calculi have been overlooked. Operative cholangiography requires that certain additional equipment be available in the operating room and that a roentgenologist or a roentgenologic technician be present. Experience is necessary in order to obtain consistently satisfactory films which permit accurate diagnosis. Also, with experience on the part of all concerned, cholangiography probably adds little if any time to the operative procedure or increase in operative hazard. Many surgeons of considerable experience however do not employ operative cholangiography because, in their opinion, the rewards of its use are virtually negligible.

If a T tube has been placed in the common duct, cholangiography is employed by most surgeons after operation and before the T tube is removed. While in most patients this examination does not reveal significant information to alter the surgeon's plan to remove the T tube, occasionally important findings are elicited. It appears to be a worthwhile practice which can be employed with little expense or discomfort to the patient, and, accordingly, it is recommended as a routine procedure.

For the past several years new media have been available for intravenous use for the purpose of visualizing the biliary tree, especially after cholecystectomy has been performed, although intravenous cholangiography is still in the phase of clinical evaluation, it appears to be of value in some cases. Variations in technic, which include administration of some drug, such as morphine, for constriction of the sphincter of Oddi; oral administration of the dye used for visualization of the gallbladder at an appropriate time prior to the intravenous injection; use of tomography, and other possibilities for improving results, are currently under study. At the time of this study it seems that intravenous cholangiography may have its greatest usefulness as an additional study in the patient who complains of attacks of pain in the upper part of the abdomen after cholecystectomy. The findings in patients of this type may be helpful in reaching a decision for or against exploration of the biliary tree.

Indications for Exploration of the Common Duct at the Time of Cholecystectomy

One of the first decisions which the surgeon must make when cholecystectomy is performed for cholelithiasis is whether the common duct should be explored. Obviously, a stone in the common duct which is overlooked when cholecystectomy is performed may require a subsequent operation. Certain information that may be obtained prior to operation and certain findings noted at the time of operation are of value to the surgeon in making a decision regarding the advisability of exploring the common duct.

First, it is well to keep in mind the symptoms commonly caused by choledocholithiasis. While it is well known that the majority of patients who have a stone in the common duct experience a severe colicky type of pain in the upper part of the abdomen on one or more occasions, it is equally true that stones may be present in the common duct without causing pain. Trueman² found that pain was present in only 77 per cent and severe colic in only 63 per cent of a group of 219 patients who had choledocholithiasis.

In passing, one might add the corollary that not all patients who have obstruction of the common duct caused by carcinoma of the pancreas have painless jaundice, as at least half or more of these patients will experience some form of pain or distress in the upper abdominal region. Just as pain is usually associated with choledocholithiasis, so is jaundice. However, in the review made by Trueman, jaundice was or had been present in only 61 per cent of the patients. Obviously, if the stone in the common duct does not cause significant obstruction, jaundice, and perhaps enlargement of the common duct, may not develop.

Chills and fever occur more frequently when stones are present in the common duct than when the gallbladder alone contains stones. In Trueman's series, chills and fever occurred in 36 per cent of patients. Colic which occurs quite frequently, for example six to ten times in one day, is more commonly associated with choledocholithiasis than with cholelithiasis alone.

Thus it is apparent that certain symptoms should create suspicion in the mind of the surgeon of the possibility of choledocholithiasis and help him to form a preoperative opinion regarding the advisability of exploring the common duct. It is equally true that the absence of these symptoms should not be interpreted as definite evidence that stones are not present in the common duct.

In general, it seems best to explore the common duct when doubt exists as to the presence of a stone within the duct. Palpation of the extrahepatic biliary ducts may reveal the presence of a calculus or arouse suspicion that a calculus is present. Under either circumstance, of course, the duct should be explored. Failure to palpate a calculus in the duct, however, cannot be accepted as definite evidence that a stone is not present. Frequently, varying degrees of induration in the head of the pancreas will render palpation of the lower end of the common duct difficult or unsatisfactory.

If jaundice is present at the time of operation, exploration of the common duct is mandatory. Also, if numerous small stones are present in the gallbladder, and especially if a small stone is found in the cystic duct, the possibility exists that stones are present in the common duct. Enlargement of the cystic duct often results from passage

of a stone through the duct or from back pressure and, therefore, exploration of the common duct is advisable. If the common duct is larger than normal, obstruction usually has been present, whether or not the patient is jaundiced at the time of operation, and the duct should be explored. Actually, exploration of the common duct at the time of cholecystectomy increases the risk of operation little if any, and should be carried out if there is any doubt in the surgeon's mind regarding the presence of a stone. In our experience at the Mayo Clinic the common duct is explored in 25 to 30 per cent of patients in whom cholecystectomy is performed for chronic cholecystitis with stones, and stones are found in the common duct in half of the patients in whom the duct is explored.

Stricture of Common Duct

Cause and Prevention—One of the most serious benign conditions encountered in the biliary tract is stricture of the common bile duct. The most important thing to do about this condition is to prevent it. By far the large majority of such strictures follow cholecystectomy. It is true that strictures may result from other causes such as stone, pancreatitis, and so forth, but the ordinary type of stricture almost invariably follows some previous operation on the biliary tract.

Lack of attention to certain details in the performance of cholecystectomy leads to most strictures of the common duct. Failure to identify or a mistake in identifying the cystic duct is probably the commonest cause of injury to the common duct. This occurs oftenest in thin women whose structures at the hilus of the liver are extremely mobile and who have a cystic duct which enters the common duct at an acute angle. Under these circumstances traction on the gallbladder and cystic duct will angulate the common duct in such a manner that it appears to be merely the lower portion of a long cystic duct, and accordingly it may be clamped inadvertently. A practice which will always prevent this occurrence is to identify the common duct both proximally and distally to the entrance of the cystic duct before applying a clamp to the cystic duct.

Another manner in which the common hepatic duct may be injured is by improper placement of a clamp on the cystic duct. This clamp should be applied at a right angle to the long axis of the bed of the gallbladder in the liver. If the tip of the clamp is directed downward toward the patient's back and extends for an appreciable distance beyond the cystic duct, it may include a portion of the common hepatic or right hepatic duct. In some cases, trauma to the hepatic duct has resulted from the inaccurate application of a clamp in the presence of sudden or unexpected hemorrhage in the region of the hilus of the liver. Hemorrhage of this type should be controlled by digital pressure of the hepatic artery and portal vein between the

thumb and index finger. The field should then be cleared, exposure improved, if necessary, and the bleeding vessel accurately grasped with an appropriate clamp.

Occasionally injury to the common duct may occur when cholecystectomy is performed for acute or subacute cholecystitis with stones and all of the tissues in the region of the cystic duct and common duct are edematous, inflamed and difficult to visualize. If the general principles mentioned previously are followed, however, injury to the common duct should be avoided even under these circumstances. In some cases of this type cholecystostomy rather than cholecystectomy may be advisable.

Surgical Treatment—Many different procedures have been suggested for the surgical treatment of stricture of the common duct. The mere fact that so many different operations have been used is evidence in itself that no single procedure is always entirely satisfactory. Some surgeons are prone to employ one particular method of repair in the treatment of stricture of the common duct, but it has been general experience that it is preferable to be familiar with several different methods of repair and to select the particular type of operation that seems best suited to the individual patient.

One subject which has remained controversial regarding the surgical treatment of stricture of the common duct concerns the importance of establishing a Roux-en-Y type of biliary intestinal anastomosis, in case the common bile duct is not reconstructed, in contrast to performing an end-to-side anastomosis between the stump of the common duct and the side of the duodenum. Some surgeons believe that reflux of intestinal contents into the biliary tree is a frequent cause of serious cholangitis. It has been my experience that the mere presence of duodenal contents in the biliary tree does not in itself cause serious pathologic changes or clinical symptoms and that unfavorable consequences result under these circumstances only when there is some obstruction at the site of the biliary intestinal anastomosis. If there is no obstruction the duodenal contents can leave the biliary tree as easily as they entered. If obstruction exists at the biliary-intestinal stoma, however, such is not the case; intraductal pressure is increased, stasis occurs and significant cholangitis and hepatic damage may ensue. In other words, the most important key to success seems to be the establishment of a biliary-intestinal stoma, which will remain adequate in size. If this can be accomplished the patient may be expected to have a good result regardless of whether a "defunctionalized" loop of jejunum was used or whether the anastomosis was made directly to the side of the duodenum. Actually, a serious and bleeding duodenal ulcer has been observed to occur after

diversion of the bile to the jejunum. For various reasons, however, if the jejunum rather than the duodenum is used, a Roux-Y type of anastomosis is probably the type of choice.

It has often been stated that reconstruction of the common bile duct is the operation of choice in the treatment of stricture of the duct, primarily because such a procedure maintains the normal physiologic function of the ampulla of Vater. I am not certain that function in this region remains normal after the development of a stricture of the common duct and subsequent reconstruction of the common duct. Nevertheless, this type of repair has been employed frequently and in some cases with considerable success. Unfortunately, stricture may recur at the site where the two ends of the duct are sutured.

Reconstruction of the duct is most applicable when an adequate stump of common hepatic duct remains to be united to a distal end of the common duct that is of sufficient size. An indwelling splinting tube of variable composition or a T tube is frequently employed when such reconstruction is made. One should remember, however, that a tube of any composition which remains in the common duct for a sufficient time will cause precipitation of calcareous material and become clogged. If a T tube is employed, this should be brought out of the common duct at a site removed from the line of suture of the reconstruction. Precipitation in a T tube may be retarded by irrigation of the tube with physiologic saline solution once or twice a day.

An operation for stricture of the common duct which I have found satisfactory in a number of cases is hepaticoduodenostomy. Often when only a stump of common hepatic duct remains which is flush with the surface of the liver, it may be most conveniently anastomosed to the duodenum. This may be done over a soft rubber catheter which projects into the duodenum and which is sutured in place usually with chromic catgut. This catheter remains in place until healing has occurred at the site of anastomosis and thereby helps to prevent contracture of the stoma. Ordinarily as large a tube is used as will conveniently fit the biliary intestinal stoma. Occasionally, if none of the common hepatic duct remains, it may be necessary to suture each hepatic duct to the duodenum separately, in which event two tubes may be employed. I hesitate to use a Y-shaped type of splinting catheter in these cases because of the fact that such a catheter may not pass spontaneously into the intestine. Splinting catheters of any type that become obstructed by calcareous material and that fail to pass spontaneously in a reasonable time require surgical removal.

While several different methods have been suggested for the actual anastomosis of the jejunum or duodenum to the stump of the common

hepatic duct, one which I have found most satisfactory is a modification of the method described by Allen⁶. This procedure entails suturing of the opened jejunum or duodenum to the capsule of the liver or the hepatic parenchyma, surrounding the end of the common hepatic duct. A stump of the duct, if such is present, is permitted to project into the lumen of the intestine. This procedure is applicable whether or not any common hepatic duct projects beyond the liver. In my experience with this type of operation during the last few years I have been impressed with the relative infrequency of recurrent stricture. A splinting catheter may or may not be used with this type of operation.

The operation described by Longmire and Sanford⁷, in which the left lobe of the liver is incised and a segment of liver is resected in order to find an available portion of the biliary tree for anastomosis with the intestinal tract, may have application in an exceptional case. Late results after this operation have not yet been reported in a significant number of cases.

Tumors of the Bile Ducts

Although benign tumors and cysts of the bile ducts have been reported, these are very uncommon. Most tumors of the bile ducts are malignant. The region of the ampulla of Vater and the lower end of the common bile duct are the most frequent sites at which these tumors are found. They occur with somewhat less frequency at the junction of the cystic duct with the common bile duct and are found even less often in the cystic duct or the hepatic duct. The site of the lesion is of some importance, for it frequently determines what can be accomplished surgically for the patient.

In passing, it might be mentioned that biliary calculi are found not infrequently in association with tumors of the bile ducts. In fact, this is true in approximately 40 per cent of cases. As a result, severe biliary colic and fluctuating jaundice, two findings which are uncommon in the presence of carcinoma of the pancreas, may be present when there is a tumor which arises in the ampullary region. A neoplastic lesion which arises in the ampulla of Vater may be difficult to recognize at the time of operation, as palpation may fail to reveal a relatively small, soft, papillary type of growth in this region. Any unusual bleeding or the appearance of some unexpected bits of tissue in an exploring scoop at the time when the common duct is explored for stone should arouse the surgeon's suspicion concerning the presence of a neoplasm. Transduodenal exposure of the papilla of Vater should be performed in any questionable case.

Obviously, complete removal of the growth and all adjacent tissues which are invaded by neoplastic cells constitutes the treatment of choice if

such a procedure is practicable. Unfortunately, this may not be feasible, either because of the extent of local involvement by neoplasm or because of distant metastatic growths. Satisfactory removal of a malignant tumor of the lower portion of the common bile duct requires a Whipple type of operation with removal of the head of the pancreas and reimplantation of the common duct into the intestinal tract. Transduodenal excision of a malignant lesion which arises in the lower end of the common bile duct does not accomplish removal of an adequate amount of tissue.

Late results after radical resection for carcinoma of the bile ducts are not as satisfactory as one would like but, in general, they are superior to those obtained after a similar type of resection performed for carcinoma of the pancreas. In the experience which my colleagues and I have had the rate of resectability for carcinoma of the ampulla of Vater is approximately twice as high as that for carcinoma of the pancreas. This may be explained by the fact that a malignant lesion which arises within the bile ducts does not have to become very large before it produces jaundice. In contrast, a similar type of lesion which arises in the pancreas, unless it is immediately adjacent to the common bile duct, frequently attains considerable size before jaundice or other significant symptoms that lead to surgical treatment have developed.

In our experience, approximately 25 per cent of patients in whom exploration is performed for carcinoma of the bile ducts undergo resection of the lesion. In approximately 25 per cent exploration alone is carried out, and in the remaining 50 per cent of patients who have lesions of this type some palliative surgical procedure is accomplished. The latter consists of either external or internal biliary drainage. Obviously internal biliary drainage is more desirable than external drainage and is always employed unless the neoplasm arises within or extends to involve the hepatic parenchyma so that it is impossible to accomplish an internal-biliary intestinal anastomosis.

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"Problems of the Newborn Infant"

A series of case reports and commentaries from the files of the Winnipeg General, St. Boniface and Children's Hospitals, illustrating factors which affect the survival of the infant during his first week of life.

SERIES X

Intestinal Obstruction in the Newborn A Case Report of Ileal Atresia*

Colin C. Ferguson, M.D., F.R.C.S. (C), F.A.C.S.

J. Kenneth Martin, M.R.C.S., L.R.C.P., M.B.B.S.

M.R.C.P. (Lond.)

I saw where in the shroud did lurk,
A curious frame of Nature's work;
A flow'ret crushed in the bud,
A nameless piece of Babyhood,
Was in her cradle-coffin lying;
Extinct, with scarce the sense of dying;
So soon to exchange the imprisoning womb
For darker closets of the tomb!

Charles Lamb.

As the neonatal mortality from prematurity, birth injury and anoxia is reduced, congenital malformation will become responsible for an increasingly higher proportion of the deaths in the first month of life. Ideally, prevention of malformation must be sought. Meanwhile, the tragedy, so vividly described by Lamb in his poem of an infant dying as soon as born, can, in many cases be averted by timely surgical intervention.

Potter and Adair¹ in 1943 reported that in the United States congenital abnormalities occupied third place as a cause of neonatal death. Rickham² (1952) estimated that one third to one half of the deaths due to congenital malformations in England and Wales might have been averted by surgical treatment. Intestinal obstructions form a large part of these. In this paper, the diagnosis and etiology of atresia of the bowel is discussed, and a case report is presented.

Diagnosis:

If babies with intestinal obstruction are going to be given the optimal chance of recovery, the diagnosis must be made early. Vomiting remains the earliest sign and occurs within the first 24 hours. Unfortunately its significance is frequently missed owing to the fact that there are many causes of neonatal vomiting other than obstruction. Vomiting of bile, however, has a significance which should never be overlooked. Abdominal distention may be difficult to assess in the early stages and is sometimes lacking in a high obstruction, where the stomach and proximal bowel may be decompressed by vomiting.

The early passage of meconium may be misleading, as the bowel below the obstruction may empty itself. Usually the stools are scant, dry, and a greyish-green colour as opposed to the tarry appearance of normal meconium. The passage of meconium in the early stages has been so confusing that Farber³ described a simple test to show the presence or absence of swallowed vernix cells. The absence of cornified epithelial cells in the meconium is presumptive evidence that intestinal atresia exists. If the facts mentioned regarding vomiting, distention and passage of meconium are fully appreciated, Farber's test is seldom necessary. The most valuable aids to diagnosis are the flat and upright x-ray films of the abdomen. These can be carried out easily and quickly with a minimum disturbance to the baby. They are usually sufficient to prove the diagnosis, and in many cases give the level of the obstruction. Barium by mouth is never necessary, but barium enemas may on occasion be helpful.

Etiology:

According to Gross⁴ (1953) in a series of 140 cases of atresia of the bowel, 50% were in the region of the ileum. Tandler's⁵ (1900) theory of non-recanalization of the gut has recently been challenged by Louw⁶ (1955) and Nixon⁷ (1955), because it has never been satisfactorily demonstrated, that the jejunum, ileum or colon ever exist in a solid stage. It does not account for bile being found in the meconium of some cases of jejunal or ileal atresia. Bile is not secreted until the eleventh fetal week, whereas the solid stage of the duodenum is present only from the 6th week to the 8th week. Furthermore, the theory does not account for gaps found in the mesentery in some cases. While it is possible that the theory may apply in cases of duodenal atresia, there are cases and experiments which suggest that lower intestinal atresia may result from interference with the blood supply to a segment of fetal bowel with atrophy and absorption of that segment. Davis and Poynter⁸ (1922) in one case, described endarteritic obliteration of the vascular arcades which corresponded to the area of atresia. Nixon⁷ (1955) and Louw⁶ (1955) suggest that volvulus and intussusception may be responsible for such vascular obstruction. Further, Louw⁶ pointed out that in 45% of mid gut atresias, there is malfixation of the mesentery which may predispose to both volvulus and intussusception.

If this new theory is correct it has an important practical application, in that it suggests that simple anastomosis may not function satisfactorily owing to a poor blood supply to the blind end of the gut. Indeed, in the past, other authors have noted a

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delay in the functioning of the anastomosis, despite a patent canal. Accordingly, resection of the distended hypertrophied proximal segment of bowel before anastomosis may be advisable.

Case Report:

A.E.: A white female child was born December 7, 1955. Birth weight was 6 pounds 12 ounces. This child was full term, normal delivery, the fourth child of a healthy family. At birth there was some meconium staining for 6 to 12 hours. About 24 hours of age it was noticed there was some abdominal distention and the child was vomiting. When the child was examined a few hours later, abdominal distention was marked and the rectum was empty. Her general condition was good. Flat and upright roentgenograms of the abdomen revealed markedly dilated loops of small bowel with no gas visualized in the distal colon. Fluid levels were present. (fig. 1)

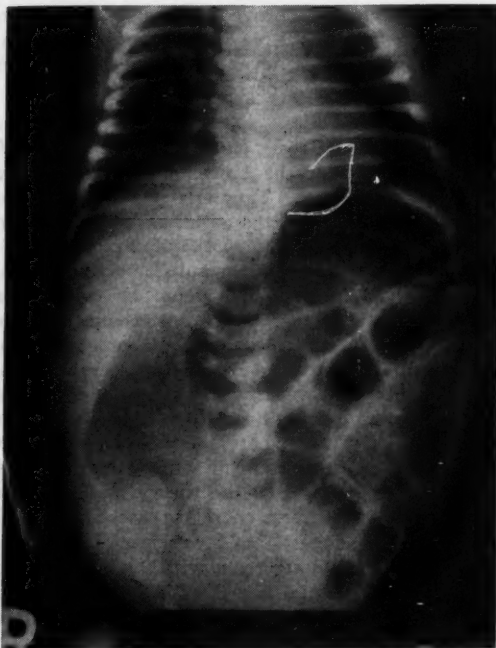


Figure 1

X-Ray film of the abdomen showing tremendous gaseous distention of small bowel, with no gas evident in the large bowel.

On December 9th at the age of 36 hours, this baby was transferred from the Winnipeg General Maternity Pavilion to the Children's Hospital for surgery. On the basis of the x-rays, a diagnosis of congenital obstruction to the lower small intestine had been made, and it was thought that this was, likely, due to an ileal atresia.

Operation was performed shortly after arrival at the Children's Hospital. A right sided rectus retracting mid-abdominal incision was employed,

and on opening the peritoneal cavity it was immediately seen that the proximal small bowel was tremendously dilated and ended blindly. The distal bowel, comprising two inches of terminal ileum and the colon, was of a very small caliber and in appearance, resembled a string of spaghetti. Because of the tremendous distention of the terminal 30 centimeters of the proximal bowel, it was necessary to resect this part of the intestine. In order to overcome the child's difficulties as rapidly and as safely as possible, it was decided to exteriorize the proximal bowel end with the cecum as a Mikulicz's type ileo-colostomy. The abdominal wound was closed about the exteriorized segments of bowel.

Following this procedure the child did quite well and was able to maintain herself by oral feedings supplemented by only an occasional intravenous infusion of electrolyte containing solution. The ileostomy functioned without difficulty. An attempt was made to crush the spur between the Mikulicz's ileo-colostomy, but every time the spur crushing clamp was applied, it became obvious that the clamp was in some way compromising the blood supply to the bowel and the clamp had to be removed.

On December 19th, ten days following the first operation, the child was returned to the operating room and the ileo-colostomy was resected with an end-to-end anastomosis of the ileum to the ascending colon. If the ileo-colostomy spur could have been successfully crushed, it would have been possible instead to perform a comparatively minor extraperitoneal closure of the ileo-colostomy.

Following the second operation the child did very well, and oral feedings were recommenced on the 22nd of December, with full strength formula being achieved in five days. At this time the child was having an average of 12 bowel movements daily. Stools were bright yellow in colour and contained a little mucus. A change was made to a skimmed evaporated milk and then to protein milk with Barley water. The character and frequency of the stools remained the same. On discharge from hospital on the 3rd of January 1956 the baby's weight was 6 lbs. 3 oz., and her hemoglobin was 15.4 gms. When she was seen again on the 28th of January 1956 her weight was 7 lbs. 5 oz., and her hemoglobin 9.3 gms. Progress was satisfactory. (fig. 2). She was still having about 10 stools daily, but their consistency was somewhat firmer.

Comments:

A total of 50 centimeters of bowel was resected at the two operative procedures. No doubt, due to the absence of this resected bowel, the child has had more numerous stools each day than one would expect in a normal child. The weight gain



Figure 2

Photo of the baby following the second operative procedure prior to discharge from the hospital.

has been slow, but, when one considers the magnitude of the operative procedures performed on this small child, and the extent of the segments of intestines resected, a steady but slow gain in weight is most gratifying in a case of this sort. Experience has shown that other infants with similarly treated lesions have, with time, shown a decrease in the number of daily stools and have subsequently begun to gain weight at a more normal rate.

Gross⁴ reports that at the Boston Children's Hospital during the period 1940-1952 there was

a total of thirty-eight cases with ileal atresias. Twenty of these were treated by means of a Mikulicz's entero-enterostomy or entero-colostomy, and of these fourteen survived. Eighteen were treated by primary ileal anastomosis, and of these only seven survived. The survival rate of 70% obtained by means of the two stage procedure, favours this method of surgical therapy in low ileal obstruction. In some instances, the atresias may be multiple, and this, of course, makes the surgical treatment a much more difficult and hazardous undertaking than when the lesion is single as was the situation in the case here reported.

Summary:

A case of ileal atresia in a newborn, successfully treated by surgery, is described. The etiology, diagnosis, and treatment of ileal atresia are discussed.

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Book Reviews

Haemolytic Disease of the Newborn. British Columbia Division of the C. M. A., 1807 West 10th Ave., Vancouver 9, B.C.

This 33 page volume is a concise, practical treatise on the subject, easily read, and with format laid out in headings that quickly cover the salient features. Major references are listed for the reader who might wish greater detail. However for practical purposes it supplies all the pertinent information in a readily assimilable form.

P. T. G.

Mortality Trends in Canada for Various Sites of Cancer. The National Cancer Institute of Canada, 800 Bay St., Toronto, Ont. Authors: A. J. Phillips, Ph.D., Statistician, N. C. I. Can.; Margaret Owchar, Statistician, Man. C. R. and R. I.

This monograph presents an analysis by sexes of the deaths in the Canadian provinces and in Canada as a whole, which were assigned to nine of the major sites of cancer and leukemia. The sites studied were buccal cavity, stomach, intestine, rectum, respiratory system, urinary organs, breast

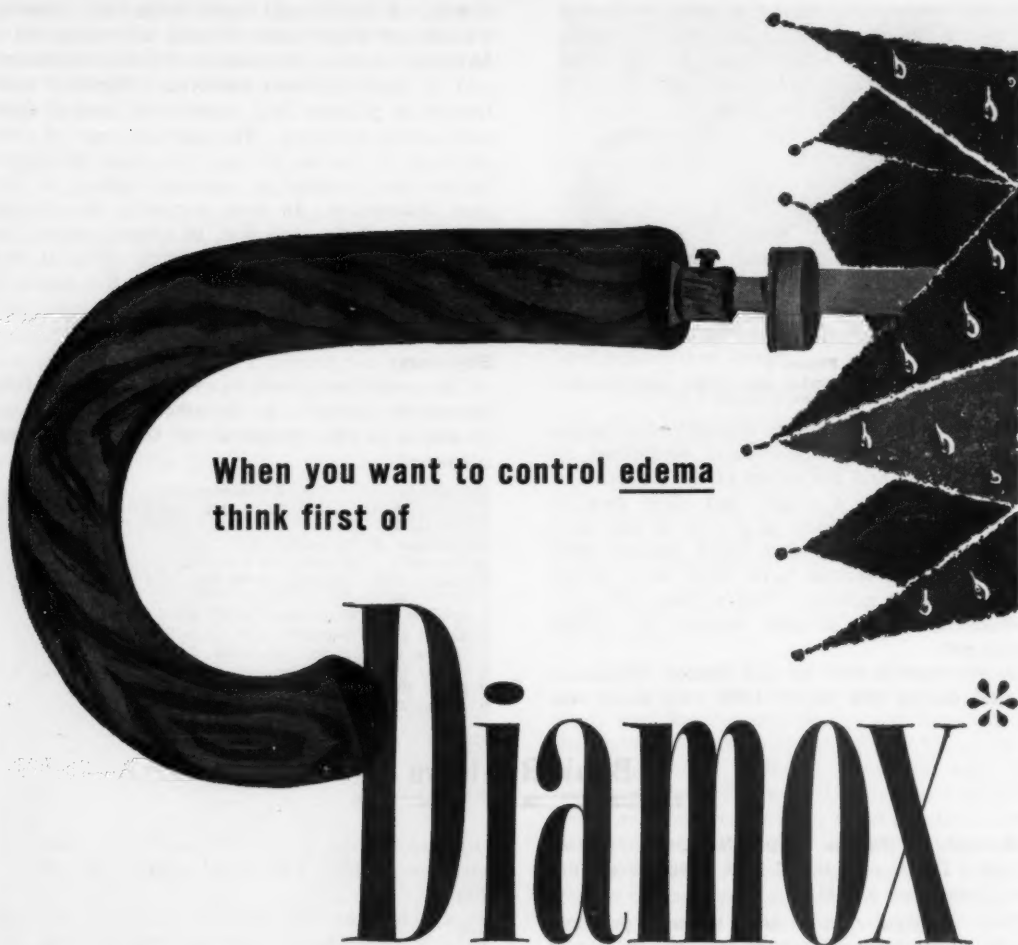
(female), uterus, genital organs (male), leukemia and aleukemia. The years studied are 1941 to 1953.

The authors first explain their methods, particularly the method of determining statistical significance. The bulk of the report is a study of each of the sites and leukemia. For each the age-adjusted mortality rates are listed by year and province and for Canada as a whole. Graphs with superimposed trend lines are presented. In each case the authors report whether or not any change is statistically significant.

In summary the authors report significant decreases in mortality of buccal cancer in males, stomach cancer in both sexes, and uterine corpus cancer. Significant increases in the mortality of respiratory cancer in males, urinary organ cancer in males, and genital organ cancer in males, are reported. Leukemia and aleukemia have increased mortality in both sexes.

This presentation is factual. No elements of fancy such as discussion of etiology are introduced.

Robert L. Cook, M.D.



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Medicine

Gastro-Intestinal Haemorrhages

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General Considerations.

The diagnosis and management of major gastrointestinal haemorrhage is not a new problem. Much has been written on this subject, particularly in the past ten years, during which time there has been a renewed emphasis on the possibilities of operative management, but the complete answer is not yet. Deaths still occur. Some bleed to death, and some die of our attempts to save them. It is therefore fitting that from time to time we review the results of these efforts and critically assess our manner of management. It is desired to present here a broad outline of the approach to this problem in Deer Lodge Hospital, and to review the outcome of our management of these people here. The period under review is from January 1947 to March 1955 inclusive.

There seems to be fairly general agreement that benign peptic ulcer apparently accounts for up to three-quarters of major gastrointestinal haemorrhages which reach civilian hospitals. (I cite no specific references for this statement, nor will I for subsequent references to widely published and accepted attitudes and principles, this in the interests of economy of time. Specific references will be discussed later if desired.) Absolute certainty of site of origin and of the cause of bleeding is not too easily reached, however, during early hours of management. Patients known to suffer from chronic peptic ulceration may bleed significantly from another lesion, such as an oesophageal varix, erosion secondary to sliding hernia, or even some "non dyspeptic" cause such as rupture of a sclerotic blood vessel. Conversely, major haemorrhage can occur from a relatively silent, unrecognized peptic ulcer in a patient with cirrhosis, splenomegaly and varices in the lower end of the oesophagus or adjacent stomach. It would, therefore, seem to be of interest to include to some extent bleeding from all causes in a review such as this, as we must consider—at least initially—all of these possible causes each time we are faced by such a patient.

The occurrence of significant haemorrhage in most areas of the human body normally calls for the more or less emergent performance of some mechanical haemostatic measure. The site of haemorrhage is first identified and visualized, and then the appropriate mechanical haemostatic procedure is performed, with or without benefit of

chemical-biological encouragement to blood clot formation. The application of these obviously correct general principles to the control of major haemorrhage arising within the gastrointestinal tract was equally obviously impossible prior to the advent of general anaesthesia and abdominal surgery. The birth and growth of these branches of surgery has provided increasing opportunity for direct attack on the bleeding point. Initially these assaults seemed to increase rather than diminish the overall mortality, and led to general acceptance of conservative attitudes even in most surgical circles until the mid 1940's. Since then, improved techniques and more detailed knowledge of anatomy and physiology have reduced operative mortality to a figure comparable with that achieved by the best non-operative measures. Expert surgery and modern facilities are, of course, required for such results. While both operative and non-operative techniques and results continue to improve, we still lose patients from time to time. We all see patients who, obviously, require operation, and we see others who, obviously, do not. We are also faced with many patients who do not readily fall into either category. The problems presented by these patients, then, constitute the main subject of this review, with our particular interest being centred on the peptic ulcer patients who constitute the major portion of this group.

The facts and circumstances which deter us from routinely opening all patients suffering major gastrointestinal haemorrhages and searching for a bleeding point are well known, but will bear summary definition again.

They may be summarized as follows:

1. The majority of these people will stop bleeding short of surgery if adequately treated. More exact diagnosis and assessment can then permit of the planning of definitive management, which may of course include radical surgical intervention.
2. The major operative procedure which exposes the site of the haemorrhage carries with it a mortality of its own, particularly if the site and nature of the bleeding point are not fairly well established pre-operatively.
3. Some of the lesions giving rise to severe gastrointestinal haemorrhages are of a nature or structure that is not readily or safely amenable to mechanical haemostatic procedures. Removal of the lesion in which the bleeding point lies may then be necessary for certain haemostasis and may not be compatible with life. For example, inflammatory or malignant tumours invading vital structures may require surgical excavation of extent and/or duration which the patient is unable to survive.

4. Another factor that deters us from too lightly deciding upon the direct attack is the fact that occasionally active bleeding may cease temporarily, preceding or during operation, and no bleeding point be found.

Indications for operation

It has then seemed logical to us to say that the usual indication for emergent operative intervention during major gastrointestinal haemorrhage is the occurrence of haemorrhage which does not stop when given the most favorable conditions for spontaneous cessation. Such a haemorrhage must also be proven or presumed to be arising from a lesion which is amenable to direct mechanical haemostatic measures such as excision, suturing or ligation, and must be accessible to such procedures without prohibitive hazard to life, directly or indirectly.

Management

The basic requirements of the patient suffering a major gastrointestinal haemorrhage are considered to be:

1. Replacement of the lost blood—in generous part at least, if not completely.
2. The provision of treatment and environment best suited to spontaneous cessation of the bleeding, during which period it is attempted to define the nature and location of the lesion giving rise to the haemorrhage.
3. The determination of whether or not the patient meets the above criteria of indication for direct surgical attack on the bleeding point and the execution of this attack when indicated.

Organization

The majority of gastrointestinal haemorrhage admitted to Deer Lodge Hospital are managed by a joint medical-surgical team. These patients are normally admitted to the gastrointestinal service of the Department of Medicine. The surgical department is immediately notified of the admission, and the available appropriate surgeon and his house staff, including the resident in surgery as a rule, participate in the management in an advisory capacity and maintain a state of readiness for emergent action. The medical department accept the formal responsibility for the patient, unless and until operation is decided upon, when the roles of internist and surgeon are reversed. It is felt that all such patients are seriously ill, and potentially dangerously so until it can be established that they have stopped bleeding or a non-hazardous origin of haemorrhage can be demonstrated. It is imperative that responsibility for these patients be clearly and definitely attributed to a particular staff doctor and his house staff, as in any patient seriously ill of any cause. It has seemed logical to delegate this responsibility in the first instance to the internists on the gastrointestinal service of the department of medicine, as these doctors fre-

quently have had fairly intimate knowledge of the patient previously. Another valid reason for channelling these patients to the medical ward is the fact that only a small percentage (approximately 10%) require emergent surgical care.

This arrangement has functioned smoothly since its inception in 1947, and in fact no differences of opinion have arisen in respect of any major principles of management, excepting on two occasions where an internist favored emergent operation and a surgeon declined on the grounds that operative risk was greater than the risk involved with conservative management. In one instance another surgeon operated successfully, and in the other instance the patient died 12 hours later of further haemorrhage, from an open sclerotic vessel, so it is seen that this system has not resulted in any fatal denials of operation by biased physicians. It is also felt that an unexpected dividend has been reaped in the teaching value of such a custom. Some recent graduates are likely to have a bias toward or against early laparotomy where ulcer is suspected as the cause of haemorrhage. Such misconceptions, one feels, are probably frequently born of "comparisons" of the pros and cons of "medical" vs. "surgical" management. Some such presentations have too frequently implied a fundamental difference in regimes, even representing them as being antagonistic or competitive. The lack of serious controversy and the general agreement existing between surgeon and internist does much to eradicate undesirable bias and to develop a rational approach in the minds of the house staff members.

Diagnostic Survey

The acceptance of the principles of management and indications for operation cited previously, logically and rightfully places a major emphasis on the diagnostic survey which must be handicapped all too frequently, however, by the condition of the patient and modifications imposed by the requirements of the emergent supportive measures usually necessary in these patients.

The detail of the differential diagnosis between bleeding peptic ulcer and major haemorrhage arising from other lesions, is a subject worthy of independent consideration, and will not be reviewed here. Our attitude toward some of the more controversial diagnostic procedures is outlined, as it may be considered to have some bearing on the subsequent course and outcome in some of the patients.

In general, it is felt that any diagnostic procedure which is likely to disturb the patient, and thus presumably interfere with spontaneous haemostasis, must offer reasonable promise of the provision of information which will be of sufficient certainty and importance as to have a direct bearing upon the immediate management of the haemorrhage.

History taking

There may be a tendency to neglect direct interrogation of the patient, but one feels that it should be performed subject to the above criteria. It may have to be obtained piece-meal, but must be done once thoroughly, though not necessarily at great length, if at all possible. The vigorous pursuit of relatives and friends who may have pertinent historical knowledge has frequently proven helpful, and has on occasion proven to be more accurate and significant than the patient's account.

It is felt that in peptic ulcer patients it is of considerable importance to elicit any historical data which may constitute indirect evidence of the nature or location of the lesion. For example, it may be possible to presume chronicity or acuteness of the lesion, or the nature and rate of bleeding may suggest the possibility of erosion of a relatively large vessel by the ulcer.

X-ray procedures

Visualizations of the upper gastrointestinal tract and small bowel have seldom been performed during bleeding, and in the small proportion in which they have been performed, they have been misleading almost as frequently as they have been helpful. On occasion, such X-rays have been followed by further major bleedings probably due to transportation to and from the X-ray department rather than the carefully executed gentle procedures now normally employed by radiologists during haemorrhage. We therefore remain conservative in our utilization of these procedures, and do not perform such examinations routinely until five to seven days after apparent cessation of all bleeding. This series of patients varies from that seen in a civilian general hospital in that we have previous records and personal knowledge of a large proportion of the patients, so it is relatively rarely that emergent X-ray may be necessary.

Endoscopy, of course, requires the services of an expert and experienced Endoscopist, particularly for visualization of the upper gastrointestinal tract.

Esophagoscopy, carefully performed when indicated, has been helpful on occasion, chiefly to identify and assess esophageal varices and erosions related to hiatus herniae.

Proctosigmoidoscopy has been performed in the lateral position, without compunction but gently, in the occasional patient where it seemed to be indicated, without any untoward sequelae or the discovery of much useful information.

Gastroscopy has been performed rarely, and is probably the least frequently indicated endoscopic procedure in these people.

Intubation, for constant siphonage or intermittent gastric aspiration and/or lavage, has been reserved for patients in whom persistent nausea and emesis have required such measures. It has

not been done routinely as a means of indicating the rate or cessation of bleeding.

Esophageal tamponade. Double balloon triple lumen tubes of the Paton and Sengstaken patterns have been used of recent years where esophageal source has been suspected and have been found to be useful both diagnostically and therapeutically.

Blood and Electrolytes

Any verified gastrointestinal bleeding is considered by the admitting staff to be emergent until proven otherwise. Blood matching is ordered as soon as it is determined that significant haemorrhage has occurred or is occurring. This does not wait upon diagnosis, but usually in major haemorrhage is needed to buy the time required to establish some sort of working diagnosis. Surveillance of the state of hydration and electrolytes and their maintenance is of course an integral part of the transfusion program.

Rest

The achievement of a state of comfortable tranquility in the patient is considered to be essential, and is sought from the outset. This should be considered when selection of ward personnel is made, particularly in the selection of any special nurses which may be required. Bodily movement is avoided as much as possible, excepting a minimum of limb movements aimed at prevention of venous thrombosis. Barbiturate sedation parenterally is our routine sedative. Morphine is reserved for those patients who do not readily and satisfactorily respond. It is also felt that any diagnostic procedure which is likely to disturb the patient, and thus possibly interfere with spontaneous haemostasis, must offer reasonable promise of the provision of information which will be of sufficient certainty and importance as to have a direct bearing upon the immediate management of the haemorrhage.

In Ulcer Patients

Diet

A free feeding regime is employed where peptic ulcer is known or presumed to be the cause of the bleeding. Frequent sipping of milk and/or water is encouraged initially. A smooth diet as desired is offered as soon as appetite and tolerance permit. It has been found necessary to specifically determine that refusal of food stems from true anorexia, and nausea, and not from the patient's fear that food is dangerous during haemorrhage. Tender meat is offered in sliced form rather than ground, and has been well tolerated when desired, whereas ground meat has caused trouble at times. When there has been difficulty with ground meat, it has usually been found to be meat that was tough and/or found to contain appreciable amounts of gristle, fascia and fat. This can be eliminated if the serving is cut in the normal manner on the plate by the patient or an attendant.

Laxatives

Early administration of small doses of milk of magnesia or a similar bland laxative three times daily following cessation of melena may prevent the necessity of enemata. Oil retention and G.M.S. enemata are preferred—at least initially—when such procedures are necessary.

Antacids

Antacids other than milk and food have sometimes been necessary. When necessary, calcium carbonate—a compound powder containing it—or a resin have been used in preference to the aluminum-hydroxide-containing antacids.

Anticholinergic drugs

These have been considered only when relief of pain in the ulcer patients has been incomplete and transient with milk and antacids, and so have been prescribed rarely. The possibility must be borne in mind that ileus and dilatation may conceal continuing haemorrhage for a time. Such an event in one patient in another hospital has recently come to notice.

Surgery

The advisability of direct surgical assault on the bleeding point is considered from the outset, and remains under consideration throughout the bleeding episode. The measures required to combat shock and provide "the most favorable conditions for spontaneous cessation" of the haemorrhage are also the measures required to prepare such a patient for operation. It is felt that when a patient does not stabilize over a period of 3 to 5 hours on the regime as outlined, with ample blood replacement (500 ccs. or more per hour if necessary) that one is then justified in assuming that the haemorrhage is unlikely to cease spontaneously, and emergent surgical attack is usually made on the bleeding point at that time, if our criteria of indication for emergent operation have been met.

One does hear of haemorrhage from peptic ulcer of a rate which can not be equalled by transfusions, and that therefore these people who are said to be recognized by the sudden massiveness and persistence of that bleeding, should be operated immediately as transfusion will not sustain them or improve their operability. We have not encountered any such cases, although transfusion under positive pressure has been required at times.

Criteria of Selection of Patients for Review

For the purpose of this study, patients who met the following criteria were reviewed:

A. The verified vomiting of approximately 500 ccs. or more of blood, and/or

B. The occurrence of melena or fluid blood stool of 500 ccs. or more. (The classical definition of melena is used here—i.e., the stool truly tarry in consistency and color as distinct from a stool of black color but normal or hard consistency), and

C. The observance and recording of at least one of the features of clinical shock.

Also included were patients in whom haemoglobin values had fallen below 60% due to current haemorrhage, even though evidence of frank shock observed or recorded while in hospital may have been equivocal. Patients who reached this level slowly without frank haemorrhage in the hours or few days immediately preceding hospitalization were **not** included, excepting where further bleeding in hospital met the above requirements.

These criteria of selection were adopted with the thought that a large proportion of the haemorrhages that would be self-limited regardless of treatment would be excluded thereby, while all haemorrhages that constituted a real threat to the patient would be included. The haemorrhage episodes reviewed here, then, are only a portion of all patients treated in hospital for haemorrhage, and those of bleeding peptic ulcers in this series constitute a relatively small percentage of all our ulcer patients who have suffered some degree of bleeding during the time period covered by this survey. We do not have figures at present as to the incidence of minor haemorrhage among our ulcer patients. We hope to establish these figures in a more comprehensive review at a later date.

These ulcer haemorrhages occurred among a group of ulcer patients estimated to be about 1400 in number who avail themselves of their entitlement to treatment in our clinic. The incidence of major haemorrhage is thus probably close to 8% among these patients.

Results

TABLE I
Aetiological Classification With Average Ages and Mortality

Diagnosis	Haemorrhages	No. of Patients	Average Age	Died	Mortality % Per Haem.	Mortality % Per Pt.
Peptic Ulcer (Duod., Gast. & Anast.)	145	115	50.6	15	10.3	12.9
Oesophageal varices	9	6	65.8	4	44	66
Hiatus hernia	4	4	69	1	25	25
Miscellaneous	28	26	54.5	6	21.4	23.0
TOTALS	186	151	52.4	26	13.9	17.2

The primary object of this review is the study of our results in bleeding peptic ulcer. Detailed consideration of the other groups will not therefore be undertaken here. Peptic ulcer accounts for 77.9% of haemorrhages occurring in 76.1% of the patients. It is of interest that in two of the six patients whose haemorrhages originated in oesophageal varices, and in whom surgical relief of portal hypertension was attempted, it was impossible in one instance because of an anomalous situation where the portal venous flow was found to pass through a venous plexus in the absence of any identifiable portal vein, and in the other because the extreme friability of the pedicle of

the enlarged, rather fibrotic spleen precluded a satisfactory lino renal shunt. Both patients survived their operations well, though one has since died of recurrent haemorrhage and is included in the deaths.

Hiatus Hernia

The only patient in this group to die was an 83 year old psychotic in uraemia who suffered a brisk haematemesis of moderate volume, accompanied by quite severe shock from which he never satisfactorily rallied, in spite of cautious administration of about 800 ccs. of blood. Haemoglobin never fell below 80%, and at autopsy blood was present in the stomach and duodenum only. Death was considered to be due to his uraemia primarily, but contributed to by the haemorrhage from haemorrhagic oesophagitis at the site of his sliding hernia.

TABLE II
Composition of "Miscellaneous" Group in Table I

Diagnosis	Haemorrhages	No. of Patients	Average Age	Died	Mortality % Per Patient
Carcinoma—Primary Gastric	3	3	58.6	2	66.6
Pancreatic Ca with invasion of stomach	1	1	36	1	100
Ruptured Atheromatous gastric artery	1	1	64	1	100
Rupture aortic aneurism	1	1	74	1	100
Uncertain	22	20	53.8	1	5.2
TOTALS	28	26	54.5	6	23

One of the carcinomatous patients suffered from primary pancreatic Ca with direct invasion of the stomach, giving rise to a fatal gastrointestinal haemorrhage.

The 64 year old man who died of haemorrhage from a fracture of a calcified segment of his right gastric artery could have been saved by early surgery—subject to the operative mortality of the procedure. He was considered to be probably bleeding from a "silent" duodenal ulcer, and bled briskly but intermittently for four days, until he suffered a fairly severe cerebral thrombosis with hemiplegia. He died during further brisk haemorrhage on his 6th hospital day. Review of the transfusion program used here reveals that blood replacement during and following each of his haemorrhages was considerably less than blood loss, and stabilization of his shock, when it occurred, was slow and was not achieved within the three to five hours mentioned in our criteria for operation, on at least two occasions. His death can not be classified as a failure of regime outlined, as his management varied from it, and at the time of his fatal haemorrhage, surgical intervention was excluded from consideration by the severity of his recent cerebral thrombosis. The relationship of this thrombosis to the rather conservative transfusion program of the first four days in hospital remains a matter for conjecture, of course. The

hazard of cerebral or coronary arterial thrombosis occurring in patients in the older age group—who are permitted to suffer repeated haemorrhages accompanied by varying degrees of shock—is illustrated by this patient. Three such episodes occurred in this series—one of these survived.

The diagnosis remained uncertain in twenty-two haemorrhages in twenty patients. This uncertainty existed in some cases because of the probable existence of two potential lesions of origin; for example, co-existence of radiologically demonstrable sliding hiatus hernia and some duodenal cap abnormality accompanied by some symptoms which suggested ulcerous activity in the duodenum and other symptoms which suggested ulcerous activity in the duodenum and other symptoms compatible with ulceration in the region of his sliding hiatus hernia. Other patients are included here where evidence was not conclusive that the provisional diagnosis was correct, even though no alternative diagnosis seemed likely. For example, the patient with atypical dyspepsia—in whom a duodenal crater was said to have been demonstrated eighteen months previously—suffered a major haemorrhage while in hospital under investigation. X-ray of the stomach and duodenum once prior to haemorrhage and twice following haemorrhage, failed to reveal abnormality, as did endoscopy. He is classified provisionally as peptic ulcer.

The provisional diagnoses in these patients are listed in Table III.

TABLE III
Composition of "Uncertain" Group Table II

Provisional Diagnosis	Haemorrhages	Patients	Died
Peptic Ulcer	7	7	
Gastritis { Alcohol, CHF & Aspirin	2 1	1 1	1
Hiatus hernia	3	3	
(Symptomless) (Ruptured Vessel?)	2	2	
Carcinoma	2	2	
Diverticulitis	2	2	
Unknown—1 old G.S.W. abd. 1 CHF	3	2	
TOTALS	22	20	1

The patients provisionally diagnosed as peptic ulcer were excluded from the ulcer group to avoid the possibility of unfairly diluting the mortality there. The patient listed under "gastritis" who died was under treatment for congestive heart failure when he suffered a sudden melena and haematuria accompanied by quite profound shock. He was transfused and responded reasonably satisfactorily until he suddenly lapsed into profound shock and died in a matter of minutes—eight hours after the haemorrhage. No origin of bleeding or gross blood were found anywhere in the gastrointestinal tract at autopsy.

The three hiatus hernia suspects are listed here because symptoms and X-ray findings were in conflict.

The patients classified under "ruptured vessel" were 60 and 73 years old respectively, suffered no abdominal complaints before, during, or since their haemorrhages, excepting the sensation of fullness preceding each haematemesis. Roentgenological investigation was negative. One of these could not be gastroscopied because of osteo-arthritis spinal deformity. No reference to gastroscopy was found in the other record.

One suspect carcinoma patient left hospital before diagnosis was confirmed, and no follow-up information is recorded. The origin of the other carcinoma suspect patient's haemorrhage was not diagnosed at the time, and he failed to return for out-patient follow up and endoscopy during his convalescence. When he returned about one year later, gastric carcinoma was found. It was felt that this time interval introduced sufficient uncertainty to classify this patient in this group, as there was no evidence of haemorrhage continuing or recurring during this period.

The two patients listed under "unknown" in Table III remain without even provisional diagnoses. One was a 73 year old with congestive heart failure, who suffered gross melena and red blood per rectum and bled down to 44% haemoglobin within 24 hours. Diverticula were seen in roentgenograms of his colon, but there was no evidence of diverticulitis clinically at that time, nor at autopsy three months later when he died of his C.H.F. No probable site of origin was found, nor had any further haemorrhage occurred in the interim. The second patient in this group has suffered two major and several minor gastrointestinal haemorrhages, usually a mixture of melena and red blood. Symptom picture suggests small bowel origin, but two laparotomies have failed to discover a point of origin. A loop of small bowel damaged by a shell fragment during W.W. II was bypassed by an entero-enterostomy at the first operation, and excised at the second, and the gastrointestinal tract from stomach to rectum explored, but not opened into at any point except at the damaged loop mentioned above. He has now developed a chronic anxiety state re his abdominal viscera and recounts a myriad of chiefly functional dyspeptic symptoms. He remains an enigma.

Peptic Ulcer Group

TABLE IV
Comparison of Duodenal, Gastric and Anastomotic Ulcers
Classification With Average Ages and Mortality of Bleeding Ulcers

Diagnosis	Haemorrhages	Patients	Average Ages	Died	Mortality % Per Haem.	Per Pt.
Duodenal	119	95	48.9	6	5.04	6.3
Gastric	17	16	65.9	9	52.9	56.2

Anastomotic	9	*5 (4)	61.4	0		
TOTALS	145	115	50.6	15	10.3	12.9

*One patient in this group had previously suffered a haemorrhage from his duodenal ulcer, so total number of patients is only increased by 4 when "Anastomotic" totals are added.

Age, history of previous haemorrhage, and location of the ulcer and age of the lesion are frequently cited as useful prognostic indicators. It is therefore of interest to consider these factors in these patients.

Age

Average age at death in duodenal ulcer fatality was 66.5 years, with the youngest 53 and the oldest 84 years of age, while the ages of gastric ulcer fatalities varied from 54 to 81 years with an average age of 66.2 years at death. The age factor would also seem to account for part of the marked discrepancy between mortality of gastric and duodenal ulcers, as all gastric ulcer patients were over 50 years of age excepting one—aged 47 years. The average age of the duodenal group is 17 years less, and 40 (of 119) haemorrhages in 34 (of 95) patients in this group occurred in patients under 40 years of age, without any fatalities.

The gastric location of the ulcer still seems to carry a malign prognostic significance in this series, when mortality in the over-forty age groups is compared. The gastric ulcer mortality stands at 56.2%, while the mortality among the 61 duodenal ulcer patients over 40 years of age only rises to 9.8%, and among the 46 duodenal ulcer patients over 50 years of age, the mortality is still only 13.04%. On the other hand, only three of the 13 "ulcer death" patients who died without benefit of laparotomy were free of other more or less fatal disease and considered to be salvageable patients. Two of these died of duodenal ulcer and one of gastric ulcer! This reversal of a frequently reported ratio provokes closer examination of our gastric ulcer deaths.

One post operative death was in a patient operated for gastric ulcer. The remaining seven gastric ulcer patients who died suffering other concurrent disease antecedent to the haemorrhages are tabulated in Fig. I.

Pre-Existing Disease	Patients	Nature of Lesion
Reticulum cell sarcoma	1	Mult. acute erosions
Liver Failure	3	2 chronic ulcers, 1 acute mult. erosion
Ca colon	1	Chronic ulcer
C.H.F., Uraemia and 2 recent myocardial infarcts	1	Single acute erosion
C.H.F.	1	Chronic ulcer

Figure I.

Only two of this group were bleeding at time of death. They died of exsanguination from carcinoma of the colon (with extensive metastases) and extensive abdominal reticulum cell sarcoma, and so can not very well be included in any comparison

of mortality of gastric and duodenal ulcer haemorrhage. All seven were considered to be in more or less terminal stages of their pre-existing diseases prior to the onset of their gastrointestinal haemorrhages. It is also of more than passing interest that three of these seven patients showed acute erosions at autopsy and lacked any history of previous peptic ulcer disease.

It is realized that the numbers of patients here are not of a magnitude to be of statistical significance, but on the other hand the difference between mortality in major duodenal and major gastric haemorrhage is seen to be more apparent than real in this series. The two deaths which occurred in patients free of other fatal disease were in one case due to post operative complications following a successful operation, and in the other case due to haemorrhage from a large sclerotic blood vessel.

History of Previous Haemorrhage

History of previous haemorrhage, on the other hand, does not seem to have been particularly significant insofar as mortality prognosis is concerned among these patients. Seventy-nine of our hundred and fifteen patients were suffering their first haemorrhage. Eight of these died, giving a mortality of 10.1%. Twenty-four of one hundred and fifteen patients were treated for more than one haemorrhage within the criteria and time span of this review, while an additional 27 patients had history of significant haemorrhage well authenticated, making a total of fifty-one patients treated for other than an initial haemorrhage. Sixty-six haemorrhages were treated in this group. Seven patients died, giving a mortality of 13.7% of 51 patients, or 10.6% of sixty-six haemorrhages.

TABLE V
Comparison of Mortality in Initial and Recurrent Haemorrhage

	Haemorrhages	Patients	Died	% Mortality
Initial Haemorrhages treated	79	79	8	10.1
Recurrent haemorrhages treated	66	—	7	10.6
Recurrent haemorrhages 51 patients	—	51	7	13.7

Eight, or 53.3% of the fifteen deaths among ulcer patients was due to initial haemorrhage, while seven, or 46.7% of deaths were the result of haemorrhage in patients with history of previous significant haemorrhage. It is thus obvious that there is no significant difference in mortality between initial and subsequent haemorrhages in this series. In fact, the mortality rate per patient among the group of recurring haemorrhages was slightly higher than the rate in patients suffering an initial haemorrhage! It is therefore felt that the criteria of selection of this group has limited us to consideration of the dangerous bleeders, and that the mortality per haemorrhage is probably a

fair yardstick with which to gauge our degree of success.

An attempt was made to assess the significance of the apparent age of the lesion clinically, but it was felt that this could not be estimated with sufficient accuracy for at least two reasons. Firstly, the well-known ability of some sufferers from chronic peptic ulcer to experience symptomatic remissions indistinguishable from the remissions enjoyed by other patients between recurrent acute ulcerations. Secondly, it was felt that any such analysis would be open to the challenge of inaccuracy on the basis that some patients—consciously or unconsciously—might tend to minimize the degree and duration of symptomatic remissions for fear of reduction or loss of their pension rights. This phase of the analysis was therefore abandoned excepting in those patients who came to autopsy or operation when examination of the lesion permitted some estimate of its age to be made. In Table VI below, ulcers are classified as "chronic" when fibrosis was seen histologically, and in a few instances where the ulcer was not removed at operation but gross appearance and palpation revealed induration of the base of the ulcer of apparently at least partially fibrous nature.

TABLE VI
"Age" of Ulcers

	Acute	Chronic	Open Vessel
LAPAROTOMY			
Emergent	2	10	6
Interval	0	27	—
AUTOPSY			
Haemorrhage deaths	2	6	5
Haemorrhage contributory	2	3	1
TOTALS	6	46	12

The autopsy group is weighted toward the acute side by the fact that the two haemorrhage deaths from acute ulcers were in patients fatally ill of other disease who developed multiple superficial gastric and duodenal mucosal erosions, more or less terminally. Haemorrhage from these erosions was their mode of death, and so has little relationship to bleeding peptic ulcer per se. The two acute ulcers where haemorrhage was considered to be contributing to—rather than primarily causing death—should probably be excluded from consideration on the same grounds. It is, thus, seen that the four patients listed as showing at autopsy an acute type of peptic ulceration without evidence of fibrosis, developed these ulcers terminally (more or less) or in the later stages of other chronic fatal disease.

It would seem, then, that of these clinical prognostic indicators, only the age of the patient and the age of the lesion seem to be of significance in this series. Our positive information on the latter point is only available in slightly less than half of the patients, but would seem to show a

definite trend. It is suggested that the nature of the ulcer, whether or not it contains a large open blood vessel, and the presence of other serious disease are probably the major prognostic factors. It is further suggested that of the clinical characteristics reviewed here, recurrence of haemorrhage, location of the ulcer, and age of the ulcer have significance only insofar as they constitute indirect evidence as to the nature of the ulcer in any particular patient suffering a major haemorrhage. It is further suggested that the age of the patient is probably of dual significance—prognostically. Firstly, it is of some importance in assessing the possibility of the presence of an eroded sclerotic vessel in the ulcer, and secondly, it has some bearing on the capacity of the body to cope with the shock of the haemorrhage and any surgical procedure required for its control.

Deaths in the Ulcer Group

There were 15 deaths in this group of 115 patients. These records were reviewed in detail in an effort to ascertain how many were preventable, why these theoretically preventable deaths occurred, and how they might have been avoided.

TABLE VII
Deaths in Ulcer Cases

Cause of Death	Managed as Outlined	Management Varied	Total	V	X
Exsanguination	0	6	6	4	6
Haemorrhage plus pre-existing condition	5	1	6	1	2
Post operative (Pulmonary)	2	0	2	2	0
Pathology secondary to haemorrhage	1	0	1	1	0
TOTALS	8	7	15	8	8

V — Open vessel seen at autopsy or operation.

X — Blood or black stool in bowel at autopsy or operation.

The six patients who died of exsanguination were all found at autopsy to have surgically correctible lesions. Three of these were suffering from other fatal diseases which precluded operation. (1 malignant hypertension, 1 abdominal malignancy, and 1 atherosclerotic heart disease.) One of the remaining three patients was denied surgery on the basis of age, lack of certainty of diagnosis (he was in hospital with acute agitated depression at the time of onset of haemorrhage) general debility, and duration of recurrent haemorrhages. One died of massive haemorrhage within forty minutes of transfer from another hospital where he had suffered several brisk haemorrhages over the preceding 6 days. No provision had been made for emergency transfusion if necessary. He died within five minutes of onset of his final hematemesis. The third patient died because of late recognition of recurrence of bleeding and inadequate transfusion following this delayed recognition. In fact,

the transfusion programs on all six patients were inadequate for one reason or another when compared with the standards outlined previously. Haemoglobin of the latter three patients was in the neighborhood of 50% at the time of onset of their final fatal haemorrhages.

The remaining two patients who were bleeding at the time of death (Table VII, line 2, column x) showed multiple superficial acute gastric erosions described by the pathologist as typical Curlings or "stress" ulcerations. These patients were fatally ill of other diseases which precluded surgical intervention, and in one case handicapped the normal transfusion program. One was suffering from extensive abdominal reticulum cell sarcoma, the other patient was in the terminal stages of portal cirrhosis and congestive heart failure; so here again management of gastrointestinal haemorrhage was handicapped by the disease and could have had little influence on the life span of the patient. Operation was out of the question in both cases, and in fact death did not seem to be due to simple exsanguination in either.

Seven patients were not actively bleeding at death. Two of these died of post-operative complications, one of aspiration pneumonia and one of atelectasis, pneumonia and electrolyte imbalance. It is not within the scope of this paper to discuss these further, as this raises the general problem of postoperative morbidity and mortality. The third patient suffered a brisk haemorrhage—which stopped spontaneously (lowest Haemoglobin 50%)—but he then suffered a cerebral thrombosis complicated by broncho-pneumonia, of which he died sixteen days later without further gastrointestinal haemorrhage. At autopsy the haemorrhage was seen to have originated from a grossly visible blood vessel in the base of a chronic duodenal ulcer. The open end of the vessel was firmly occluded by well organized thrombus, which had completely controlled bleeding for the last sixteen days of life.

Two patients with liver disease suffered sharp haemorrhages, which reduced haemoglobin estimation to 68% and 72% respectively, and with quite severe shock. Both patients drifted into hepatic coma—which was eventually fatal in both cases in spite of adequate and prompt treatment of the shock. The sixth patient in this group suffered a similar short sharp haemorrhage with shock and died of his C.H.F. and uraemia days later, and without further haemorrhage. The seventh patient in this group was a patient known to have a quiescent chronic duodenal ulcer. He underwent lumbar sympathectomy for peripheral vascular disease and went into a state of collapse thirty-four hours post-operatively and died in a matter of minutes. Autopsy revealed portal thrombophlebitis extending into the vena cava, chronic cholecystitis and nephro-sclerosis. The stomach

contained "150 ccs. of bloody fluid" so the pathologist recorded haemorrhage from chronic duodenal ulcer as contributing to the death.

It is, thus, seen that no improvement in management of their haemorrhage could have saved five of these seven patients. It is extremely unlikely that either of the operated patients would have survived without operation, as both men were bleeding freely from good sized sclerotic vessels at the time of operation; and in fact both operations were performed smoothly and without any untoward event. One feels quite confident, then, in concluding that any variation in the management of their haemorrhages is most unlikely to have saved any of this group.

In summary, it thus appears that of the thirteen deaths in patients not subjected to emergency surgery, none of the five who were not bleeding at death could have been saved by surgical intervention, although, possibly, a more vigorous transfusion and anti-shock program might possibly have prevented the occurrence of the subsequently fatal cerebral thrombosis in one of these patients. This suggestion, though impossible of proof, is supported by the fact that the three patients in this series who suffered severe cerebro vascular accidents were "below par" on their transfusion program at the time of the manifestation of their thromboses.

Five of the eight patients who were bleeding at death suffered serious unrelated diseases which precluded surgical intervention, and in some cases seriously interfered with normal supportive transfusions. The management of the remaining three patients departed from that outlined earlier in this paper. Strict application of our principles would have brought all three of these patients to surgery prior to their deaths. Deviations from the recommended routine noted in one or more of these three cases were:

1. Failure to adequately replace blood promptly.
2. Failure to arrange for immediate availability of an adequate supply (4 or 5 bottles) of blood for patients who had bled massively but intermittently.
3. Delayed recognition of onset of bleeding.
4. An unnecessary inter-hospital transfer.
5. Failure to elicit history, which would have enabled reasonably firm diagnosis of ulcer to have been made. (This occurred in a patient suffering from acute mental depression prior to his haemorrhage. His mental state and co-operation improved as he became progressively more ill of his haemorrhages, so that by the time the diagnosis of the cause of his bleeding was reasonably certain, he was considered to be unlikely to survive laparotomy.)

Statistically, one could reasonably expect to have saved at least two of three patients by emergency operation. The clinical records would also

seem to justify this expectation as reasonable. One would have come to operation while he was still a good operative risk, and the other two would have been operated prior to the actual time of death.

One is therefore forced to the conclusion that we had three probably preventable deaths, and that these deaths must be attributed to the "human factor"—aberrations in judgment or performance or both—rather than any fundamental defect in our *modus operandi*—provided one is willing to accept the morbidity and mortality of major abdominal surgery in approximately 10% of cases of major haemorrhage.

TABLE VIII
Major Surgery in Ulcer Haemorrhage

Class of Operation	No. of Operations	Mortality	X	V
Emergency G.U.	5	1	3	3
Interval G.U.	2			
Emergency D.U.	7	1	4	3
Interval D.U.	22			
Interval Anastomotic	3			
TOTALS	39	(5.1%) 2	7	6

V — Open vessel seen at autopsy or operation.

X — Blood or black stool in bowel at autopsy or operation.

Gastrectomy with removal of the lesion has been the operation of choice. Occasionally thorough undersewing or local excision only have been performed when the patient's condition seemed to contra-indicate gastrectomy, and when haemostasis was readily achieved in this manner.

It is of interest that in the twelve emergency laparotomies performed, in seven patients active bleeding was taking place when the bleeding point was exposed, and in six of these the bleeding point was an open sclerotic vessel in a chronic ulcer. In the remaining five patients, bleeding had ceased. The colon could be seen to contain blood in one of these, but in four there was no visible evidence of any appreciable amount of blood in the bowel. In one of these patients, no lesion was found so nothing was done. This patient, however, underwent a gastrectomy some eighteen months later for a small but deeply penetrating posterior duodenal ulcer.

It is thus evident that operative findings showed that five of twelve emergent laparotomies need not have been emergent. These were in patients who had suffered recurrent rather massive bleeds, however, and one cannot be too critical of emergent operation under these circumstances in patients in the atherosclerotic age group who are presumably bleeding from chronic ulcer.

Conclusion

Three probably preventable deaths occurred among one hundred and fifteen patients treated for one hundred and forty-five major haemorrhages from peptic ulcer in Deer Lodge Hospital in the years January 1947 to March 1955. All three

were due to failure to achieve perfection in the application of the widely accepted principles of management enunciated here. It is therefore suggested that, for present at least, our mortality can best be reduced by careful and thorough applica-

tion of these principles of management to all patients suffering from significant gastro-duodenal haemorrhage of "peptic" origin, rather than any major modification in policy of management at this time.

Abstracts from the Literature

Inference with Uptake of Radioiodine Tracer During the Administration of Vitamin-Mineral Mixtures. New Eng. J. Med., 523: 286, 1955 (Aug. 18).

Iodine in certain vitamin-mineral preparations may interfere with tests of radioiodine uptake. The history of intake of a compound vitamin-mineral preparation should be elicited when radioiodine uptake is being measured.

A. G. Rogers.

Author: Manning, W. K.

Title: Observations upon 250 cases of bleeding peptic ulcer.

Reference: M. J. Australia, 2: 802 (Nov.) 1955.

250 patients with bleeding peptic ulcer were seen in hospital in five years, 1947 to 1952. 22 patients died. 6 of these died after surgery, 2 due to bleeding from cardiac portion of the stomach, 1 to pulmonary edema, and 3 from peritonitis. Associated serious disease was frequently present and in 5 deaths, acute pulmonary edema was terminal. Only 4 of the 16 who died without surgery were free of a serious complicating disease. Therefore, of approximately 250 patients treated medically, only 4 died who were in reasonably good health.

228 non-fatal cases were treated medically. 20% were mild, the hemoglobin not falling below 9 gms.%. 25% had recurrent bleeding. Difficulty in assessing continued and severe bleeding was noted because hematemesis or the rectal passage of blood may be delayed for hours; nausea with small amounts of blood in the stomach may produce signs of severe shock, yet patients with very low hemoglobin may have no shock; the blood in emesis is diluted by other secretions. The hemoglobin estimation was the most reliable indication of the extent of the blood loss. Cirrhosis and stomach cancer are the two most important differential diagnostic problems. The discussion centers around recognition of patients that fail to respond to medical treatment. Statistical evidence does not supply a reliable set of criteria for deciding in any one case, whether bleeding will or will not stop without operation. Two alternative procedures are to operate on all patients with bleeding ulcer, or none, and accept an inevitable mortality

rate. The author feels, in light of the observations of his study, that at present, all patients with bleeding peptic ulcers should be treated non-surgically. The inevitable mortality is accepted and should be reasonably low. Good medical treatment is outlined. One all-important principle is restraint in the transfusion of blood, as the author suggests that death from pulmonary edema, and recurrent bleeding results from free blood transfusion.

Arnold G. Rogers.

Author: Mosbech, J. and Videbaek, A.

Title: On the etiology of esophageal carcinoma.

Reference: J. Nat. Cancer Inst., 15: 1665 (June) 1955.

101 of 169 patients with carcinoma of the esophagus were suitable for an etiologic study. There were 5 males to 1 female patient. The average age at onset was 67.9 years for the men and 71.6 years for the women. In 85%, the diagnosis was proved histologically. Over half the lesions were in the middle third of the esophagus. Less than a third were close to the cardia. About 10% were high-seated. No hereditary influence was found. The same incidence of esophageal and total carcinoma was found in 877 relatives of patients with cancer of the esophagus, as in 2,572 corresponding relatives of healthy persons. Syphilis was not of etiologic significance. The Plummer-Vinson syndrome did not occur in this series. Alcohol abuse was an important associated factor, 65% of the men being alcoholics, with 21% of them having jobs closely associated with liquor. One woman was an alcoholic. Cancer of the esophagus must be considered due to exogenous factors.

Arnold G. Rogers.

The Triad of Tachycardia, Digitalis Toxicity and Mercurial Fast Edema in Congestive Heart Failure Complicated by Pulmonary Embolism. William R. Tench, M.D., American Journal of Medicine, XIX, 869 (Dec.), 1955.

The author calls attention to the triad of intractable edema, disproportionate tachycardia and digitalis toxicity as common manifestations of pulmonary embolism in patients with congestive

heart failure. Autopsy and clinical correlations were made on fifty patients with chronic congestive heart failure who had died of pulmonary embolism. Comparison was made with autopsy and clinical records on fifty other patients who had died in chronic congestive heart failure without pulmonary embolism. The "triad" was found to have been present in a large number of the patients who had pulmonary emboli and was not encountered in the control group.

In the author's opinion, the intractable edema, tachycardia and digitalis toxicity are more common manifestations of pulmonary embolism than chest pain, dyspnoea and hemoptysis.

D. H. Stein.

Anaphylactic Penicillin Reactions. Proc. Staff Mayo Clinic. 30, 634, 1955. G. A. Peters, L. L. Henderson, L. E. Prickman.

Penicillin has replaced foreign serums as the commonest cause of anaphylactic shock and leads the list of drugs in frequency, diversity and severity of sensitivity. The reaction is characterized by the sudden onset of dyspnoea and weakness, rapid pulse, cyanosis and rapid unconsciousness. The mechanism of reaction is antigen-antibody because studies on non-fatal cases show immediate wheals on direct skin-testing of the involved patients, and on passive transfers of the Prausnitz-Kustner type.

The authors present three non-fatal cases of reactions to oral penicillin and one fatal case following intra-muscular injection, and suggest the following scheme for prevention and treatment of

penicillin anaphylaxis. If the patient has recently had penicillin without a reaction, then the chances of anaphylactoid reaction to immediate further doses are minimal. If the patient has recently received penicillin, he should be asked if he has ever had hives, itching, a rash, choking or burning sensations, localized or generalized joint swelling, or fainting after a penicillin injection. He should be asked whether he has hay fever, or asthma, or has had heavy doses of penicillin in the past. If he has had any reaction of the above types, penicillin should be avoided. If the history is uncertain, a skin test should be done, and those with a history of atopy should be skin-tested under any circumstances. If the skin test is positive—avoid penicillin. If the history and skin tests are doubtful, it is best to use another antibiotic. Cross-reactions occur between Penicillin G, O and V, so that all three are to be avoided.

In the acute attack 0.5 ml. of 1/1000 epinephrine should be given into the injection site, and a tourniquet placed over this limb and 0.5 ml. of epinephrine injected into the other arm. Oxygen should be given, and 500 ml. of glucose in water with 5 ml. of 1/1000 1-arterenol should be started. Cortisone also may be given and mephentermine 50 mgs. intra-muscularly may be given. 3/8 grain Ephedrine may be given orally if possible. Weakness and shakiness are the only residua after a few hours. What is most important in the after-care is telling the patient in no uncertain terms, the dangers penicillin, in any shape or form, oral, intra-muscular or nasal instillations, hold for him; and perhaps supplying him with a diabetic-type of metal tag in case of future emergencies.

A. M. Brown.

Schering Award Competition

Devoted to research and the communication of knowledge in the medical profession, the Schering Award has begun its eleventh annual program for medical students in the United States and Canada.

Students are invited to participate by selecting one of three suggested subjects and submitting papers to the Schering Award Committee, Bloomfield, N.J. Both a \$500 first prize and \$250 second prize are offered for each of the three subjects. Decisions are made by a group of judges who are authorities in their respective fields. In addition, every participant in the contest receives a professionally useful gift.

The three subjects for 1956, announced by C. J. Szmaj, M.D., chairman of the Schering Award Committee, are:

1. The Clinical Use of Adrenocortical Steroids in Collagen Diseases.

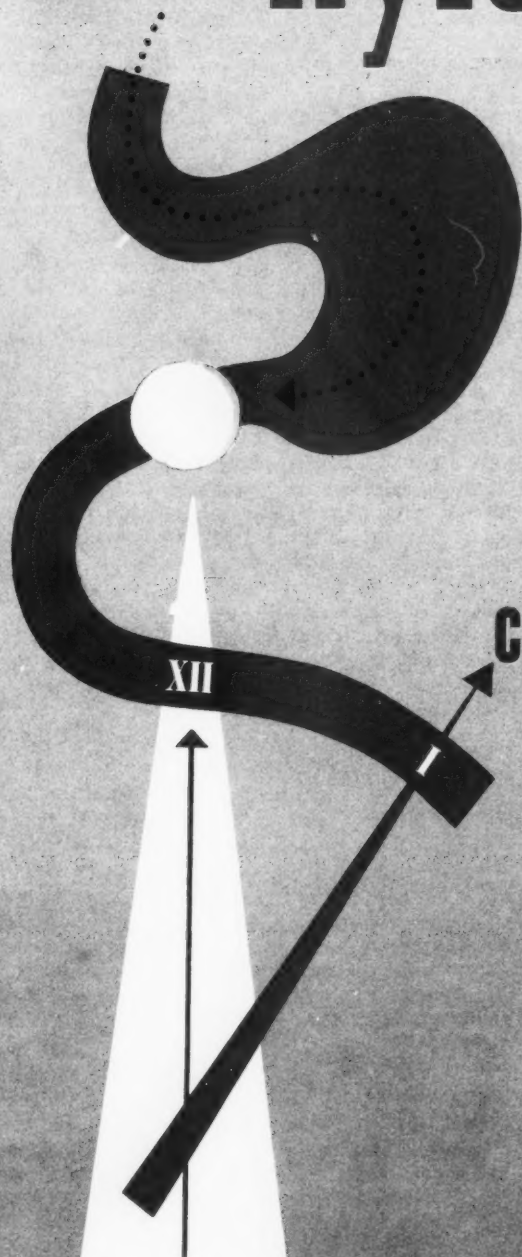
2. Metabolic Aspects of the Aging Process.

3. New Applications of Antihistamines in Medicine and Surgery.

Literature and entry forms are being distributed in the medical schools. Students who are interested in participating, either individually or in teams, should submit their entry forms before July 1, 1956 and manuscripts must be postmarked not later than Sept. 30, 1956.

In a letter to the deans of medical schools, Francis C. Brown, president of Schering Corporation, said the Schering Award Committee was pleased that during the past several years Schering Award-winning papers have been met with increasing interest by professional journals and that many have already been published. The outstanding work of participating students has been such that they will undoubtedly contribute significantly to the professional literature during their careers in medicine, Mr. Brown added.

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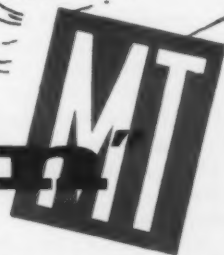
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*Fiskio, P.W.. *General Practitioner* 11:70 (May) 1955.

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Obstetrics and Gynecology

Management of Threatened Abortion

H. Guyot, B.A., M.D.

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St. Boniface Hospital

Abortion may be defined as the termination of pregnancy prior to the period of viability, that is, before the fetus has reached a weight of 1000 gm., which is usually before the 28th week of pregnancy.

The incidence of spontaneous abortion has been estimated to be around 10% to 20% of all pregnancies, and clinical experience shows that abortion occurs most frequently during the second and third months of pregnancy, that is, before the 12th week.

Moreover, there is evidence that the etiological factors of early abortion may be quite different from those of later abortion. Therefore, I will limit my discussion to the problem of early abortion, occurring during the first twelve weeks.

Etiology

It is well known that defects in development of the embryo, placenta or membranes are present in about 50% of spontaneous abortions. It appears also that the earlier in pregnancy abortion takes place, the higher is the incidence of pathologic ova. From the studies which have been made, it has been inferred by some workers that the pathologic or blighted ovum is the result of defective germ plasm, which implies that the defect may originate in the germ cells of the father or mother.

We could then take a fatalistic view and reason that the treatment of threatened abortion in early pregnancy is futile, since it is considered a fortunate fact that pathologic ova almost inevitably result in spontaneous abortion.

But the farmer who has a poor crop seldom puts the blame on the seed; he will usually attribute his crop failure to the soil, the weather or the weeds. Similarly, other factors of environment may influence life and development of a normal fertilized ovum, causing it to become defective.

These environmental factors are classified as follows:

1. Faulty nutrition, lack of vitamins, especially lack of vitamin E in habitual abortion.
2. Abnormalities of the genital tract, such as fibroids, cervical lacerations, retroversions, infections.
3. Disturbances of hormone production by the corpus luteum, placenta, thyroid and adrenals, which may result in defective decidual formation.
4. Chronic systemic diseases, such as undulant fever, chronic nephritis, anaemia.

5. Severe acute infections, such as pneumonia, typhoid, pyelitis.

6. Psychic and physical trauma, such as emotional shock, overexertion, accidents.

All these factors point to the fact that environment may play an important part in the production of pathologic ova and abortion. It follows therefore, that, if we can recognize early enough the environmental conditions responsible for abortion, we may possibly increase the salvage of pregnancies threatened with abortion.

Pathology

The whole subject of mechanism and pathology of early abortion can be dealt with briefly by saying that in most cases there is first death of the embryo followed by hemorrhage into the decidua basalis, necrosis in the adjacent tissues, detachment of the ovum and finally expulsion by uterine contractions.

It is generally believed that in the majority of abortions, the embryo dies approximately three weeks before vaginal bleeding occurs. So by the time symptoms have appeared, it is often already too late to begin treatment.

Clinical Aspect

The classical symptoms of threatened abortion are vaginal bleeding, which may or may not be accompanied by lower abdominal cramps or persistent backache, and on vaginal examination the cervix is found to be closed. If the bleeding increases and the cramps become more severe, the cervix begins to dilate and the abortion becomes imminent. Nearly all these cases progress to expulsion of the embryo.

An abortion is considered inevitable when there is dilation of the cervix and rupture of membranes.

There is no doubt that many cases of slight vaginal bleeding are erroneously diagnosed as threatened abortion. The physiologic bleeding or placental sign described by Hartman, cervical polyp or erosion, double uterus, even ectopic pregnancy and early carcinoma of the cervix may be responsible for the bleeding.

Conversely, some cases of threatened abortion are diagnosed as inevitable, based only on the amount or duration of bleeding. Some of these cases could go on to full term if more conservative treatment would be applied, instead of giving pitocin or rushing the patient to the operating room for a dilation and curettage. Bleeding alone is not a sign of inevitable abortion, there must be dilatation of the cervix.

The observation has been made that an initial brown discharge lasting a few days followed by

bright red bleeding is an indication that abortion is likely to take place.

Treatment

After reviewing the literature for the last ten years, it is disappointing to find that there is no specific and universally accepted treatment for threatened or repeated abortions aside from rest and sedation. No method of treatment has been proved conclusively to be superior to another or to no treatment at all.

King has reviewed 2,792 cases of threatened abortion reported by nine authors. Of these cases 67% carried through to term regardless of the type of treatment. The percentage of fetal salvage obtained with large and small doses of progesterone, with large and small doses of stillboestrol, with vitamin E and with no treatment except rest and sedation, is practically the same. Some have made enthusiastic claims of 80% cures on selected cases with endocrine therapy. On the other hand, Colvin, in a study of over 1,500 cases of threatened abortion, showed that 70% of his patients maintained their pregnancy without the use of progesterone or stillboestrol.

The rationale of hormonal therapy is based on the theory that bleeding is due to decidual necrosis, which is secondary to failure of progesterone production by the corpus luteum and placenta.

The progesterone level is determined by the amount of pregnanediol excreted in the urine. An average of 10 mgm. of pregnanediol is excreted daily during the first ten weeks of normal pregnancy and remains fairly constant. Then it gradually increases to 40-100 mgm. a day until the eighth month.

This level of pregnanediol excretion is used as a prognostic sign by the proponents of the progesterone therapy. They say that, in a case of threatened abortion, if the urinary pregnanediol is normal (10 mgm. a day or more) the prognosis is good, but if the level falls to 5 mgm. a day or less then the prognosis is poor and it is an indication for substitution therapy.

Randall claims that the prompt administration of progesterone intravenously to all patients who threaten to abort reduces the incidence of abortion from 28% to 18%. This difference is assumed to be due to the beneficial effect of progesterone in cases where there was a deficiency.

In cases of low pregnanediol excretion, at least 75 to 100 mgm. of progesterone should be given daily by hypo to obtain results. Small doses of 10 or 20 mgm. a day are insufficient to restore and maintain the progesterone secretion at a normal level.

The amount of progesterone secreted by the corpus luteum and placenta has been estimated by cytological smears taken from the anterior fornix and stained by the Papanicolaou technique. A

poor smear, characterized by increased cornification of epithelial cells, indicates a low progesterone level and it is assumed that the patient is likely to abort. Conversely, a good smear showing less cornification and a normal progesterone level indicates a good prognosis. But according to Randall, this statement is not always true. Abortions occur with a good smear and pregnancy goes on with a poor smear, so that this test has no prognostic value. He also claims that the administration of stillboestrol to patients who show a poor smear does not improve the fetal salvage.

The use of stillboestrol for the treatment and prevention of abortion, largely advocated by the Smiths of Boston, is still a very controversial subject. The purpose of stillboestrol therapy is to stimulate and maintain the production of progesterone, and thus, favor implantation and nourishment of the fertilized ovum. It is given mainly as prophylactic treatment. The recommended dosage is 5 mgm. a day for the first week, 10 mgm. a day for the second week and so on up to 150 mgm. a day up to the eighth month. A pregnant woman tolerates these high doses remarkably well, as long as the dose is increased gradually.

Enthusiastic claims have been made in the prevention of abortion, premature delivery, habitual abortion, diabetes and toxemia. Frequent office visits are required during this treatment, the patient receiving a great deal of attention, and this fact, no doubt, has a considerable psychological effect.

Dieckman and associates, after a carefully conducted survey of over 1,600 cases, where half the cases were given diethylstilboestrol according to the Smith schedule and the other half were given placebos, conclude that stillboestrol did not reduce the incidence of abortion, prematurity or toxemia.

There appears to be more controversy on the use of stillboestrol than progesterone, and the percentage of threatened abortions which can be saved by any one type of therapy is probably very small.

Psychological factors as a cause or cure of threatened abortions are being given more importance during the last few years. A woman who is to abort needs all the help and attention that we can give her. After studying her case carefully, we may select one form of hormone treatment and hope for a favorable result realizing that its value is largely psychotherapeutic.

Apart from hormone therapy the treatment of threatened abortion consists mainly in bed rest and sedation. When there is vaginal bleeding without pain we must determine where the bleeding is coming from, and, although it is not essential to do a vaginal examination at the first visit, it should be done during the next few days. A gentle

examination, done under aseptic precautions, with visualization of the cervix, will not increase the risk of abortion or infection.

Occasionally a cervical erosion or polyp will be found which can be treated by light cautery, being careful not to enter the os. An ectopic pregnancy may be suspected if there is tenderness in one of the fornices. Even an early carcinoma of the cervix may be detected and the diagnosis can be confirmed by cytological smear or biopsy.

If a retroversion is found this is better left alone. Trying to replace a retroverted uterus manually during a normal pregnancy, and more so when the patient is susceptible to abort, is only inviting trouble. The normal enlargement of the uterus, aided by postural treatment, will replace it much more gently than the fingers of the examiner. If retroversion is the cause of repeated abortions this condition is better treated surgically when the patient is not pregnant. Similarly, a torn cervix with an incompetent internal os is treated by surgery after pregnancy. Painful pedunculated fibroids or large ovarian cysts are better removed after the pregnancy has gone over three months but occasionally, on account of the severity of symptoms, we may be forced to do it sooner.

For the usual treatment of threatened abortion, at the first sign of bleeding, the patient is put to bed and given a sedative, such as phenobarb gr. ss t.i.d. and a hypnotic to ensure sleep, such as nembutal, seconal or tuinal. If the bleeding stops or decreases within 48 hours she is allowed out of bed but she should limit her activities for the next two or three days. Sexual intercourse is prohibited for two weeks after bleeding has stopped. It is those cases which bleed slightly for a week or more, without pain or with a mild backache, which present a problem.

The treatment of threatened abortion would be much simplified if we had some exact means of knowing whether the embryo is dead or alive, pathologic or normal. Pregnancy tests are not reliable enough in such cases. A positive result does not prove that the embryo is living, it only proves that the chorionic ectoderm is still active. It usually takes 8 to 10 days to become negative after the expulsion of the fetus and placenta.

If a rest of 6 or 7 days does not bring about a diminution or stoppage of bleeding, the patient should be allowed to get up and move around. Nearly all such pregnancies are abnormal and bed rest simply prolongs an inevitable abortion. Bed rest can be abused. It is costly and it is no guarantee against abortion. Its principal value lies in the control of bleeding.

B.M.R. studies should be done to decide whether thyroid therapy is required. If the basal metabolism rate is low, thyroid extract in a dosage of $\frac{1}{2}$ to 2 grains a day may be of some benefit.

With the onset of uterine contractions or the presence of a persistent low backache associated with a feeling of pelvic pressure, the prognosis for the continuation of pregnancy becomes poor, no matter what form of treatment is given. However, there are a few cases of threatened abortion with pain which clear up and go through a normal pregnancy. Therefore, it is worthwhile to try to save the pregnancy by quieting the uterus with stronger sedatives. Morphine is generally used for this purpose in a dosage of 1/6 to 1/4 gr.

From my own experience, I have the impression that morphine does exactly the opposite and that it favors dilatation of the cervix and expulsion of the fetus. We use morphine in cases of prolonged labor due to cervical dystocia with remarkable results and we have no reason to believe that its effect is different in early pregnancy. For this reason, I prefer to use other sedatives, such as demerol or nisental.

Progesterone, which is supposed to have a tranquillizing effect on the uterus, may be given in large doses intramuscularly, 50 mgm. twice a day.

Vitamin E (mixed tocopherols), 40 mgm. a day by mouth, is also recommended, but its efficacy is still unsettled.

Occasionally, in spite of all treatment given, slight bleeding persists for weeks and we must determine whether there is any possibility that pregnancy will continue. If one or two pregnancy tests are negative, then it is an indication to empty the uterus by oxytocic drugs or curettage. However, if the test is positive, we must wait two weeks or more and be guided by the size of the uterus after doing repeated bimanual examinations. If the uterus does not increase in size or becomes smaller, if the cervix dilates or if there are products of conception protruding through it, then we are justified in concluding that the fetus is dead and that the uterus should be emptied.

Summary

1. The treatment of threatened abortion by progesterone or stillboestrol is still unsettled. It is a hit and miss project unless pregnanediol tests are done.
2. If progesterone is used it should be given in large doses to be effective: 75 to 100 mgm. a day.
3. Stillboestrol is used mostly as prophylactic treatment.
4. The hormone treatment is closely related to psychotherapy. Its purely medical value is still very uncertain.
5. A vaginal examination, including visualization of the cervix by means of a speculum, is essential in all cases of vaginal bleeding.
6. Bed rest and sedation are still the most widely used and most reliable forms of treatment.

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Medical History

North American Indian Medicine

Ross Mitchell, M.D.*

Our information about North American Indian medicine and medicine-men comes chiefly from the journals of missionaries and fur traders. The Jesuit Relations have many references to Indian medicine, as do also the journals kept by the wintering partners or bourgeois of the North West Fur Company and the chief traders or factors of the Hudson's Bay Company. Most of these references date from the eighteenth and early nineteenth century, but even in the present day there are white men who are well qualified to evaluate Indian medicine. Yet, even these, who through long and sympathetic acquaintance with Indian people and familiarity with their language are best qualified to discuss this subject, have found it difficult to arrive at the whole truth. There has always been a barrier. The Indian is suspicious, reticent and afraid of ridicule; the white man too often is arrogant, overbearing and materialistic in his outlook.

In Indian tribal authority there was not only the chief but also the medicine-man or shaman who often had more influence than the chief. This influence derived from the real or supposed ability of the medicine-man to exercise psychic powers, and to communicate with the spirit world.

James Isham, governor of the Hudson's Bay Company at York Factory, 1750-1761, wrote thus in "Observations on Hudson's Bay" in Vol. XII Hudson's Bay Record Society,

"Conceit (i.e. imagination) has great Effect upon these natives, some having died with such — I have known an Indian when in liquor say he would be the Death of such and such an Indian. By which Such Indian has took it to heart and Died — Imagining such Indians had it in their power to put them out of the world at their pleasure; I take such to proceed from weakness they being Very timorous and fearfull."

It is not a matter of wonder that Indians should be plagued with fears and horrible imaginings. With the exception of the Mandan Indians on the Dakota plains, who through tilling the soil and trading were relatively prosperous, most Indian tribes had a precarious living. They had to contend with the elemental forces of nature and with wild animals often possessed of greater strength and speed and much cunning. It was easy for the Indian to believe in a god of lightning, thunder or whirlwind and to imagine that animals could communicate with him and influence his life. From this arose

the custom of wearing amulets to ward off evil spirits, and the belief in totems. This belief led to the making of rock mosaics of the turtle and serpent, such as are to be found in the Whiteshell Reserve, or in the grotesquely carved and colored totem poles of British Columbia coastal tribes with their representation of the thunderbird and the whale.

Coupled with this worship of nature was their feeling of the all-pervasive and all-embracing spirit world. Like the ancient Chaldeans and Egyptians they placed great faith in dreams and visions. In this, Joseph in Egypt, Daniel in Babylon and Freud in Vienna would be in accord with the Indian shamans. The name first given to the Amerindian child by one of his oldest relatives was usually determined by a dream, as was also his later name. When the youth reached puberty he underwent a period of solitary fasting during which he would reach an ecstatic state. The dream or vision coming to him in this state would shape and color the rest of his life. Thus, if he dreamt of an eagle, he would adopt this bird as his guardian spirit whom he might invoke in times of distress or emergency, and he would carry in his medicine bag an eagle feather as a sacred symbol.

This belief in a guardian angel or tutelary genius the Indian shared with the Greek. Sophocles puts these words in the mouth of Oedipus when the king realizes the horror of his situation:

"Oh, wretched I am—alas! To what land shall I be taken, miserable man? What has become of my voice, losing itself in a void? Oh, daemon that attends me, where have you vanished?"

Hubert Work, former U.S. Secretary of the Interior and president of the American Medical Association, wrote in the American Review of Reviews:

"One of the most popular former medicine-men of the White Mountain Apaches claimed that his ability to heal diseases came while walking alone one day in the woods when a bird spoke to him from the limb of a tree. The bird told him to go forward and he would meet an animal friend that had an important message from the Great Spirit. He proceeded a mile or two when he met a white horse, who conversed with him in the Apache language, explaining that he had been chosen as a great medicine man to treat his people when they were sick. The horse then instructed him in the arts and mysteries of Indian medicine, which ministrations he later used in his practice as a medicine man which much profit."

Such a story belongs to the childhood of the world and tends to put the Amerindians among

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the primitive people. Yet, they were capable of rising to considerable heights.

Harlow Brooks, born in Minnesota, played as a frontier child with red children, but later studied medicine, made a name as a research worker and ended as an emeritus professor of medicine in New York City. His vacations were spent in the forests, mountains and deserts in the company of American Indians. Speaking before the Section of Historical and Cultural Medicine of the New York Academy of Medicine on October 26, 1928, Dr. Brooks said this:

"... a people as strongly characteristic and great as the Indian has been must have had a system of medicine in some way comparable and suitable to its type."

He continues: "Back as far as history and tradition go, we know that the Medicine man has always held a position in the tribe and in its social standards far more powerful and important relatively than the white medicine man has yet attained. Many of the great Indians in history have been medicine men. Tecumseh, Joseph, Geronimo, Sitting Bull are names familiar to us all. No war was ever waged except on his advice or consent, and in many instances the medicine man was also war chief as was the case of Sitting Bull."

A full account of the Midewiwin or Grand Medicine Society of the Ojibways may be found in the Annual Report of the U.S. Bureau of Ethnology, 1885-86, by W. J. Hoffman. The Jesuits in their efforts to christianize the red men met with much success among the Hurons but were bitterly opposed by the Iroquois and some met martyrdom. Hoffman explains that the antagonism of the Ojibways to the Jesuits lay in the fact that the tradition of Indian genesis and cosmogony and the ritual of initiation into the Society of the Mide constituted what to them is a religion even more powerful and impressive than the Christian religion is to the average civilized man.

The purposes of the Mide society were two fold: first to preserve the traditions just mentioned, and second, to give a certain class of ambitious men and women sufficient influence through their acknowledged power of exorcism and necromancy to lead a comfortable life at the expense of the credulous.

In the Midewiwin or Grand Medicine Society there were four degrees. In some respects it resembled the Masonic Order. The ritual was written on birch bark, and the accompanying songs and chants were learned by memory. The different degrees were marked by the varying patterns and colors of the face painting. The lodge room was opened only to the initiates or candidates for initiation. Those desiring to be admitted had to undergo a long period of testing and preparation

by examining boards. Although the office of a medicine-man was not hereditary, it was quite natural that sons or daughters of successful practitioners should aspire to reach the position attained by their parents.

Mr. H. M. S. Cotter, son of Chief Trader J. Cotter of Moose Factory, was in charge of the Hudson's Bay Company's post at Cumberland House when our correspondence began over twenty years ago. He kindly gave me a reprint of "The Medicine Man," a paper read before the Bathurst and Rideau Medical Association, Jan. 20, 1886, by Robert Bell, B.A., Sc., M.D., LL.D., Assistant director of the Geological Survey of Canada. Dr. Bell spoke from a knowledge of about thirty years living with the Cree and Ojibway Indians. Here is an extract from his address:

"In former times the great medicine-men among these Indians devoted their whole lives to the study and practice of their art, and even yet (1886) it receives the greater part of their attention. They were accustomed to do no common work, but lived at the expense of the band they were amongst. They had great influence with the people, principally from playing upon the superstitious fears, which had become inculcated by their own class from generation to generation. For the medicine-men form a secret society with exclusive privileges, and they exercise an enormous power in degrading their people. They pretend to dispense good and bad luck, to control the weather, to be able to influence the movements of game and fish so as to bring plenty or starvation to the tribe, to predict events, to tell the fortunes of individuals, and generally to have the confidence and cooperation of both bad and good spirits with whom they communicate freely on certain set occasions" . . .

"In order to communicate with the spirits the medicine-men must have a special kind of wigwam erected. This is done by planting a number of nicely trimmed poles in the form of a circle about 5 or 6 feet in diameter. They are fixed in the erect position by being firmly bound together with hoops at intervals. The poles are lashed to the hoops with spruce roots or other fastening. This frame is securely enclosed with bark all the way up, so that no one can peep in, which, however, is never attempted. The medicine-man then gets inside and fastens up the opening. He mutters and sings at intervals, and then maintains a perfect silence. Suddenly the wigwam is violently shaken, after which it is announced that the spirits have arrived, and he is ready to answer questions . . . A question must generally be accompanied by a fee such as a plug of tobacco or a box of matches. The answers are given in a deep sepulchral voice and are sometimes direct and positive, but oftener ambiguous, and in the latter case great ingenuity

is sometimes shown in constructing an answer, which will be verified whichever way events may happen . . . Of course, with experience and intelligence in his favor, the chances are more than even that his predictions will be fulfilled, and great stress is laid on every hit while the failures are easily forgotten." These practices accord with the belief in the sayings of Egyptian and Greek oracles.

Dr. Bell mentions 15 plants used medicinally by the Ojibway Indians. One of them is the spruce tree. A decoction of its leaves is used internally as a remedy for scurvy. This was used with signal success by Jacques Cartier and his men at Quebec in 1535 and by Miles Macdonnell and the Selkirk settlers at York Factory in 1812-13. Another of the plants is senega or snake root which commands a ready market in Winnipeg. It is used in cough medicines.

More recent than Dr. Bell is Janet Carruthers, a resident nurse on Indian reserves in Northwestern Ontario and Alberta. In the March 1952 issue of "The Beaver" under the title of "Land of the Ojibway," she writes:

"Many of the Ojibways' ills are taken care of by the medicine-men, and the medicine-man should not be entirely discounted; nor should he be confused with the philanderers and quacks who exploit the innocent with mystics and charms. Knowledge of healing qualities of plants has come to him from far back in his race. Long before salicylates were listed in a scientific pharmacopoeia he knew the medicinal value of willow-bark. The liniments he makes from pine needles and the infusions he concocts from hepatica, sarsaparilla root and wintergreen are all ancestors of our store-dispensed medicine."

At a recent annual meeting of the Manitoba Medical Association Dr. R. F. Yule, medical officer of Northern Manitoba Indians, said that the medicine-men are dying out as are also the Indian midwives. He mentioned that it was very difficult to get Indians to discuss their ideas of medicine, especially with him because he was a white doctor.

Norman Luxton and his brother operate a store in Banff where furs and Indian curios are sold to tourists. In a letter in answer to an inquiry about Indian medicine he replied that the medicine-men and women are dying out, but that he had known two or three whose skill was highly regarded by white settlers as well as Indians. One old medicine-man had great success in treating horses.

Isaac Cowie came from Leswick, Scotland, in 1867 to take service with the Hudson's Bay Company, chiefly at Fort Qu'Appelle, and remained in the west until his death in 1917. In his book "The Company of Adventurers" (1913), he mentioned the frequency of injuries to the left hand of buffalo

hunters caused by the bursting of guns. Through the use of "antiseptic herbs which so wonderfully prevented gangrene and aided healing" these Indian and Metis hunters escaped lightly. He tells of a Metis medicine-man, Disgarlais or Wah-ween-shee-cap, who was dreaded as a professor of Indian medicine and black art in general. He had the faculty of putting himself in a trance, lying so long in that state that twice during one winter his sons thought he was really dead and came to the post for material to bury him. On both these occasions he came to life again after two or three days, during which he said he had visited spirit-land and related his experiences there to his fascinated and awe-struck audience.

By the time he fell into the third trance, or actually died, that winter his sons had no occasion to come to the Fort for winding sheet or coffin nails. The grave had been dug already, so when he once more was apparently dead the sons lost no time in nailing him down in his coffin, sinking him in a deep grave and covering him with earth. Then they poured water thereon so as to freeze him down in case he should come to life once more to terrorize his panic-stricken and superstitious descendants.

In Vol. 17, August 1952, Historical Bulletin of the Calgary Associate Clinic, Dr. George R. Johnson, former registrar of the College of Physicians and Surgeons of Alberta, told of an ovoid mass weighing four pounds which was dug up near Rocky Mountain House. The press and a white man declared it to be pemmican which had been cached or lost many years ago. Dr. Johnson established that it was the resting phase of a fungus, the Canadian Tuckahoe. The Indians, Crees, Stoneys and Blackfeet, all called it "ground medicine," formerly used as a decoction for stomach complaints and as a paste to dress wounds and ulcers. The suggestion is made in the article that in times past the Indians in some way had discovered the marvellous properties of soil molds from which penicillin, streptomycin, terramycin and other antibiotics have been developed. The suggestion is not beyond the bounds of possibility.

In summary one may say that the Indian medicine-men had a considerable knowledge of the healing properties of herbs, minerals and animal substances, that they could treat wounds and fractures, and they practised psychosomatic medicine long before that term was known to white practitioners. The medicine-men attained their place in the tribe only after long preparations and examinations, they were the intellectuals in their community and they were held in high esteem. If some of their number abused their position, used their art only after they had been well paid and worked upon the fears of the credulous, who among us should throw the first stone?

Medico-Legal

The Medical-Legal Aspect of Back Injuries

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Introduction:

Perhaps there is no domain of bodily injury more beset with confusion and uncertainty than the back. "Pain in the back" is probably the most common complaint in that section of the population which has attained adult life. It may be a symptom of trifling importance or it may be of dire significance. It may be initiated by injury, and, in the opinion of the patient, it is always made worse by the trauma of accident.

This attitude—favored by the popular misconception that few, if any, doctors know much, if anything about the back and its mechanism, with the concurrent conviction that if one's complaints are loud enough and long enough, sympathy will be evoked; sympathy which, in court action, at least, may have a substantial cash value—this attitude accounts largely for the multiplicity of claims for pension in the armed services, for compensation in industry, and for damages in our so-called civil life.

It is the function of the medical witness to assemble as many pertinent facts as possible, and to submit an unbiased interpretation of them. The lawyer's function is different; he may make a selection of the facts presented; he may make a different interpretation of them; his aim is to present the case for his client in the most favorable light; he is an advocate, not a witness, whereas the doctor is a witness and emphatically not an advocate. Both witness and advocate, however, must build upon a foundation of facts. It is the purpose of this paper to point out what observation and experience have demonstrated to be facts in relation to injuries of the back.

Scope of the Term "Back"

From this standpoint the term "Back" includes the vertebral column, its contents and environment from the base of the skull above to the tip of the tailbone below. This territory is divided into 5 portions:

1. The neck or cervical
2. The chest, or thoracic, or dorsal
3. The loins or lumbar
4. The sacral
5. The coccygeal, or tail-piece.

The two lowest segments are associated with the pelvis. They will be omitted from this presentation.

Let us consider the back under two headings,

A. The Motor Apparatus

Address to the Medico-Legal Society of Manitoba, 1st November, 1955.

B. The Control Apparatus.

A. The Motor Apparatus

Various elements contribute to this superb mechanism:

1. Bones, (Vertebrae). These are arranged to form the vertebral column or spine. Of these vertebrae there are 7 in the neck, 12 in the thoracic or dorsal part, 5 in the lumbar region. Each one of these vertebrae is fashioned uniquely for its particular purpose. No two are exactly alike, yet all conform to a basic plan.

2. Joints. These are, on the whole small in size but they are very numerous. Each has a cushioning pad of articular cartilage, and, where movement is free, there is a lubricating mechanism—synovial membrane—identical with that found in the larger joints.

3. Ligaments. These are restraining bands which act as a secondary line of defence against exceeding the normal limits of joint movement. They are made of white fibrous tissue; they are not extensible, not elastic. When overstretched, they tear.

4. Discs. Between the most massive parts of adjoining vertebrae—the bodies or centra—there are resilient cushions made of fibrous tissue and gristle. These intervertebral discs are attached to the vertebrae above and below them. They are guarded in front by a very strong band of fibrous tissue, the anterior common ligament, and behind, by a similar but weaker band, the posterior common ligament.

5. Muscles. Though mentioned last, these are by far the most important constituents of the motor apparatus. They are the active, contractile part of the machine. Only through them is active movement possible. As elsewhere in the body, they are attached to bone by inextensible tendons or by fleshy fibers. The variation in size, in power, in direction of pull is almost infinite. This muscle mechanism which may control the relation of one individual vertebra to another, and at the same time determine the movement of the column as a whole is overwhelmingly impressive in its disposition and co-ordination. It is a veritable microcosm of power.

B. The Control Apparatus

Situated within a tunnel in the vertebral column is the Spinal Cord. This is a soft, grayish column of supporting material in which there are lodged myriads of nerve cells, mostly arranged in groups. These nerve cells are connected with one another, and with the brain by pathways or tracts. Some of these tracts run upwards; some downwards. From the cord, there emerge bundles of nerve fibers, prolongations from the cells. These

are known as nerve roots, the posterior ones being sensory, the anterior, motor. At a variable distance from the spinal cord, the anterior and posterior roots join one another to form the spinal nerves. The spinal nerves therefore come individually from definite segments or "levels" of the spinal cord. Injury to the cord must accordingly affect motor and sensory roots emerging below the level of injury. Each spinal nerve is a two-way cable; one strand conveys messages inward, giving information about the state of the territory it serves; the other strand conveys instructions outwards to the muscles to make the necessary adjustments.

Opposite the upper and the lower limb segments of the cord there are swellings known as the cervical and lumbar enlargements respectively. These swellings are for the accommodation of the nerve cells specially devoted to the service of the upper and lower limbs. The spinal cord itself extends no lower than the lower border of the first lumbar vertebra. Below this level the spinal tunnel is occupied by a leash of nerve roots and spinal nerves. After escaping from the spinal tunnel, the spinal nerves branch and re-branch until every muscle in the body has a sensory and a motor connection established with its local divisional station in the spinal cord.

It is very unfortunate that interruption of the nerve paths in the cord produces irreparable damage; re-establishment of the broken tract is impossible. Fortunately, the situation is somewhat better in regard to the spinal nerves. With these a certain amount of repair may take place, although having regard to the microscopic dimensions of the nerve fibrils, accurate co-aptation of the severed ends is likely to be uncommon so that the repair process is usually incomplete.

Functions of the Vertebral Column.

These are numerous; we shall select the two most obvious ones.

Protection of the Spinal Cord and its extensions
Support of the Trunk and Head.

Protection of the Spinal Cord.

This is probably the primary function of the vertebral column. The long tunnel communicating above with the skull cavity and extending downwards through the sacrum is roofed throughout by the bony neural arches. These consist on each side of a pillar or pedicle arising from the back of the massive vertebral body, and a plate or lamina which inclines backwards towards the middle line of the body to join its fellow of the opposite side. At the area of junction, a strong bony promontory projects backwards, the vertebral spine. The tips of the spines are joined by a strong ligament, the supraspinous ligament; the gap between adjoining spines is filled by the interspinous ligament. These ligaments are not elastic.

Under sufficient strain, they will rupture. Between adjoining laminae there are ligaments which are elastic. The covering of the cord is thus partly bone and partly ligament.

On each side, at the junction of pedicle and lamina another bony projection is present, the transverse process. In addition to the transverse process, a "superior articular process" passes headwards, and an "inferior or articular process" passes tailwards. These articular processes form freely movable joints, the "apophyseal" joints. They are subject to damage and to degenerative changes like other larger joints. The whole protective covering is like a flexible tube with walls of irregular thickness. No matter how the tube is bent, the spinal cord is not affected as long as the bending is within the limits for which the tube was designed. When, however, the bending strain is excessive, the wall of the tube is no longer sound, its integrity is lost. As a consequence, the lumen of the tube is narrowed, and pressure may be imposed on the spinal cord, the spinal roots, or spinal nerves. When the function of the cord is abolished below the level of injury, the condition is known as "Paraplegia." It may be complete or incomplete.

Support of the Trunk and Head.

Man is the only animal that habitually walks upright; he is therefore the only animal that possesses a true vertebral column. In quadrupeds, the vertebral axis is a tie-beam, not a column. There are different kinds of column, and, from an engineering point of view, that possessed by man is structurally of the weakest variety. It is flexible, is fixed below, but is free to move in any direction above. It is subject to 4 types of strain; compression, flexion, rotation, shearing. Compression strains are abundantly allowed for; the latest information (Winnipeg Free Press, 1-7-55) records that a man weighing 340 lbs. "clean-and-jerked" a weight of 424.6 lbs. The compression strain on his vertebral column was probably between 600 and 700 lbs. at least. In old age, the capacity for resistance is lessened by decalcification of the bones, and partial collapse may occur under what would ordinarily be normal stresses. Compression strains are met by the bodies or centra of the vertebrae, and by the joints between the neural arches, the apophyseal joints. Compression strains vary with the weight of the overlying mass. The body portion of this is relatively constant; the weight lifted by the arms is variable.

Flexion strains are much more frequent and more important. They are countered by the action of the muscles, hence muscle strain is by far the most common cause of pain in the back. It is usually transient, but if repeated and long-continued it may lead to chronic aching and stiff-

ness. When taken by surprise, as in most severe accidents, the muscles are off guard, not braced for the shock, and the strain is borne by the inextensible constituents of the supporting mechanism, the ligaments, the intervertebral discs, the joints and the bones themselves.

Rotation and shearing may be regarded as complicating the effects of excessive flexion. Rotation is a normal property of the cervical spine and to a slight extent of the thoracic portion. The lumbar spine is designed to inhibit rotation.

Injuries of the Motor Apparatus. (Bony Column) Mechanism.

In both military and civil life injury may be sustained by gunshot wound or by accident. Sometimes the trauma of accident is very severe and generalized as in violent car collision or in falls from a height. Mostly, however, the lesion is localized, and the mechanism which produces it is either the "Whiplash" or the "Jack-knife." Whiplash injury has been defined as forced flexion of the column with spontaneous recoil. Jack-knife injury means excessive flexion without recoil. The region most often affected is that where relatively fixed and relatively mobile parts adjoin one another; i.e., the upper and lower ends of the neck, and upper and lower ends of the lumbar region. The neck region, being very mobile, is the favorite site of the "whiplash;" the dorso-lumbar region is overwhelmingly the chief locus of the "jack-knife" injury. In all cases there is excessive flexion. The part played by recoil is less well established.

Effects.

1. Muscle Strain — already noted.
2. Sprain of ligaments.
3. Rupture of the intervertebral disc, including retropulsion.
4. Fracture of vertebra, including body, processes, neural arch.
5. Dislocation of a vertebra, with or without fracture.

Injuries of the Control Apparatus

Mechanism.

1. Complete Transection of the spinal cord.
2. Partial section of the spinal cord.
3. Contusion of the spinal cord.
4. Damage to nerve roots.

(Immediate)

Later on there may be

5. Compression by Callus, etc.
6. Irritation by bony spurs.

(Delayed)

Effects.

1. Loss of motor power—skeletal, visceral.
2. Pain or loss of sensation.
3. Change in or loss of reflexes: cord, roots.

Regional Considerations.

Back injuries occur to individuals; it is therefore very necessary to have a clinical as well as a systematic approach. This involves a topographical consideration. The signs associated with each system must be investigated singly and thoroughly but, in summing up, more is to be learned by a study of regions; cervical, thoracic, dorso-lumbar, lumbo-sacral. Let us select the two areas which are most often involved:

1. Cervical.
2. Dorso-lumbar.

Lesions of the Cervical Spine.

It is necessary to discuss briefly some of the anatomical features of the cervical column. The first, (Atlas) and the second, (Axis) vertebrae are modified in shape, the body of the first having fused with the body of the second to form a pivot, (odontoid process) around which the ring-shaped atlas rotates.

A second feature is the relative fragility of the cervical bodies.

A third characteristic is that when normal the line of the cervical vertebrae shows a forward bowing.

In the fourth place we note the slope and the shallowness of the articular processes. The upper ones face backwards and upwards allowing considerable freedom of movement, but also permitting dislocation more readily than in the thoracic or the lumbar region.

Atlanto-axial Injuries.

Injuries to the atlas and axis are not very frequent, but are very often fatal. They may be caused by apparently trifling injury, or by manipulation of the neck for relief of stiffness and pain, or by chiropractic "adjustments." Unilateral dislocation is the commonest form of injury; next most common is fracture of the odontoid process; third is fracture of the atlas with or without fracture of the odontoid process. Most cases are due to falls, the head striking the ground, (60%, Osgood) or to being struck on the head by a heavy object. (20%). Death may occur immediately from spinal cord damage or it may occur much later, after some trivial activity such as sneezing. In other cases paralysis develops gradually. The perilous cases are those in which, at the time of injury, no neurological signs are present. The medical attendant may be lulled into making an incomplete investigation.

Injuries of the other Cervical Vertebrae.

Any of the remaining 5 cervical vertebrae may be damaged. Four cases reported by Craig are typical of the preceding violence.

- a) Diving into shallow water.
- b) Automobile plunging into a ten-foot gully.
- c) Heavy smokestack fell about 10 feet, striking patient on the neck.
- d) Playing football.

Mechanism of the Injury.

This is either forced flexion of the head on the chest or hyperextension. Barnes points out that there is no correspondence between the degree of bony damage and the severity of the injury to the cord. There may be no X-ray evidence of bone injury while the cord is irretrievably damaged, or there may be gross bony displacement without any cord damage.

Forced flexion may bring about forward dislocation, crushing fractures of the vertebral body or retropulsion of a disc. The posterior ligaments may or may not be torn; if violence is very severe, they are certain to rupture.

In hyperextension, the danger is greater in elderly patients with arthritic changes in the neck. The anterior common ligament on the front of the vertebral bodies gives way, sometimes carrying with it a small fragment of bone; the rupture may spread through the disc or the disc may be torn from the vertebra above. When this happens there is no barrier to further displacement. Barnes reported 6 cases of hyperextension injury. All occurred in patients over 50 years of age; 5 of the 6 died.

Not all injuries of the cervical spine, however, are acute. A fairly large number of patients complain of pain in the neck and shoulders, which is annoying rather than severe. X-ray examination usually shows thinning of one or more of the intervertebral discs with appropriate changes in the adjoining vertebral bodies. Almost always, too, there is loss of the normal forward bowing of the cervical spine. These changes make their appearance at a variable time after receipt of the injury. Myers reported 2 cases in which serial radiographs gave a time interval of 10 months and 12 months respectively. If violence has been sustained by the neck this is always blamed for the condition, probably rightly so in most cases. The appearance of X-ray signs would suggest that the injury is likely to have occurred 9 to 12 months previously. Moreover, it has been shown by Hult and Sjogren that "disc degeneration occurs in a large number of young people with no history of antecedent trauma." There is obviously ground for argument as to which came first, the disc degeneration or the accident.

Dorso-Lumbar Lesions.

An excellent analysis of this group is given by Nicoll. He observed 166 fractures in 152 patients, all of whom were coal-miners. No patient was regarded as having a perfect functional result unless he could resume work at the coal-face, often in cramped position throughout an 8-hour day. The average follow-up was 5 years. The mechanism of injury was always forced flexion, usually with shearing and sometimes with rotation. 66.4% of the cases occurred in 12th dorsal, 1st and 2nd

lumbar vertebrae. 4 types of fracture were noted: anterior wedging, lateral wedging, fracture-dislocation, fracture of the neural arch. In examination of dorso-lumbar injuries, special attention must be given to all four of the skeletal structures involved, viz.:

- a) The vertebral body
- b) The intervertebral disc
- c) The joints
- d) The interspinous ligaments.

Having regard to the supporting function of the spine alone, all fractures can be classified as "stable" or "unstable." The stable ones are those which show little if any tendency to increased deformity; they include wedge fractures—anterior and lateral—and fractures of the laminae above the 4th lumbar vertebra. The unstable ones are fracture-luxations associated with rupture of the interspinous ligament; all fracture-dislocations; all fractures of the laminae of the 4th and 5th lumbar vertebrae. Nicoll found that, for the stable fractures, treatment by methods of re-habilitation after a preliminary rest period was much more effective than fixation in plaster, even though considerable deformity persisted. 82% were fit for work at the coal-face or for light work underground when treated "functionally" as against 37% who had been treated by fixation in plaster. The reason for this is that in back injuries, the soft parts, notably the muscles, are also damaged, and graduated movement is better for them than prolonged immobilization and inactivity.

Persistent Sequelae.

These have been analyzed under the headings of pain, mobility, power and endurance.

Pain

89 cases out of 152 complained of residual pain. Of these 40% were at the site of fracture, and 60% in the lower part of the back. The low back pain probably arises from soft-part sources, and is associated with prolonged immobilization, localized pain at the site of injury occurred in 93% of lateral wedge fractures.

Mobility

Loss of mobility has been over-stressed in the past. Localized fusion of two or three vertebrae makes no appreciable difference to movement of the back since in flexion most of the movement occurs at the hip-joints. The common test of forward bending to touch the toes while the knees are straight is thus fallacious. Gross restriction of movement is usually due to muscle spasm resulting from pain; when the pain is removed, mobility is restored.

Power and Endurance

These are different properties of muscle and should not be confused. It is important to determine whether deficiency in accomplishing a full day's work is due to loss of muscle power or to pain restricting full output.

Traumatic Paraplegia

Serious as the effects of back injury may be upon the supporting function of the spine, they are less so than the result of damage to the spinal cord. The subject has been well discussed by Holdsworth. "The object of treatment," he states, "in fracture-dislocations of the spine with paraplegia, is to restore alignment and stability of the spine in preparation for future weight-bearing; to free the cord and nerve-roots from possible compression, so as to prevent any hindrance to spontaneous recovery and prevent further damage; and to make nursing easy so that bedsores may be avoided." In his opinion, plaster beds should never be used; a bed sore may form in as little as 12 hours and may take 2 years to heal. "Fixation should be carried out by plates bolted to the spinous processes so that stability is assured, and turning of the patient can be carried out from the beginning."

Complete paraplegia involves loss of control of the bladder; education of the patient and of the bladder itself are of paramount importance. "The meticulous care and nursing required can only be achieved in special centres by a staff properly trained in this work." A spinal centre is an emergency center and must always have beds available. Recent cases must always have priority.

"In Sheffield, the spinal centre consists of 50 beds and serves a heavily industrialized population of about 2 millions. 71 patients have been treated since it was opened. No bed sore, no uncontrollable urinary infection has occurred. All patients with lumbo-dorsal paraplegia have been up in 3 months, and discharged home in an average of 9 months." This is a proud record. The lone practitioner can hardly be blamed if his results fall far short of it. Co-operation between hospitals and hospital staffs should make it possible for such a special spinal centre to be established in every good-sized community.

Diagnostic Pitfalls

Some years ago it was customary to ascribe practically all pains in the lower back to "Sacroiliac strain." The caption is now largely replaced by the terms "Myositis" or "Fibrositis." What these words mean is by no means clear. With increased knowledge they will undoubtedly disappear from the nomenclature. Meanwhile they provide a name for more or less localized areas of tenderness, which, incidentally, are pensionable. It is to be presumed also that they bring satisfaction and comfort to patient and to doctor much as the term "Eczema" does to the dermatologist, or "Angina" to the heart specialist. Of recent years the intervertebral disc has become "le dernier cri" in lumbar uneasiness. There is not time on the present occasion to consider this subject at length. Suffice it to say that the intervertebral disc has

borne accusations of many kinds and of many degrees from petty misdemeanours to heinous felonies. Sometimes it has been guilty, but on many occasions it has been wrongfully indicted, wrongfully convicted, and wrongfully punished. An interesting paper comes from the pen of Goldenberg. He had observed 14 such cases between 1945 and 1953, and reported 5 of them in detail. All had been stigmatized as "Discs."

1. Metastatic Cancer; primary in the thyroid gland.
2. Tumor of the spinal cord, relatively benign.
3. Multiple Myeloma
4. Secondary growth; primary lung cancer
5. Secondary growth; primary in the kidney.

Goldenberg concludes that there is no clinical picture typical of the herniated disc. The presence of anaemia or of albumin in the urine of the patient always calls for further laboratory study. "The patient who seems to be another typical case of disc may turn out to be a difficult diagnostic problem."

These are examples of organic errors of diagnosis. When the psychological side of the picture is taken into account, the possibilities of misinterpretation are, like Sam Weller's knowledge of London, "extensive and peculiar."

Psychological Considerations

Every untoward happening has psychological repercussions. What the net outcome will be depends largely on that imponderable quality known politely as "morale," metaphorically as "grit" and colloquially as "guts." This quality is partly the result of psychological heredity; partly it is derived from experience in meeting and overcoming opposition and disappointment. Failure should be a great stimulus; much greater than success. In Browning's phrase, one should be "baffled to fight better." In many cases however, adversity delivers a knock-out blow. Fear takes command and apprehension rules. This is especially so in the ranks of labor (actual, not political). Poorly educated, with no prospect of employment in white-collar occupations, the laborer has as his sole capital a strong body, usually symbolized by a strong back. To him, a back injury, even if the actual damage is small, may be a crippling blow. In it he sees a menace to his means of livelihood, and a threat to the comfort of those whom he holds dear. When this misadventure happens to a Hercules who has been accustomed to display his physical strength, he becomes a Samson shorn of his locks, an object of pity. Little wonder that he is inclined to compromise for a pension, or for compensation rather than risk another blow to his physical capacity and his self-confidence. It is for such men that programmes of re-habilitation, intelligently carried out are of priceless value.

On the distaff side, the painful back may have its place as a means of escaping from the dreary

routine of household drudgery, the making of beds, and the recurrent ritual of the wash-tub and the kitchen sink. Among the unemployed of the more privileged classes, boredom, the desire to attract attention, and the current fashion in conversational ailments may play a part. The motives are many and complex.

So deep may be the emotional impact of the accident that sensory and motor loss may occur, although the mechanism for feeling and for movement is intact. This condition, dubbed Hysteria, is seldom found in cases of serious damage. It is regarded as functional rather than organic. It entails no intention to deceive the examiner; the unfortunate patient has succeeded in deceiving him- or herself.

Malingering is a different story. Here an attempt is made at conscious deception. It is not a common finding. The simulated disability seldom stands up under expert examination. It is not a pressing problem.

Medico-legal Queries

1. Congenital Malformations: e.g., spina bifida occulta, small lumbar apophyses.
What is the legal relation of these to injury?
2. What, if any, is the legal viewpoint on the part played by the patient's age?
3. In estimating disability should one ask, Is it
Temporary or permanent
Latent
Progressive
Amenable to treatment. (?)
4. What is the relation of the injury to pre-existing lesions? e.g.,
Tuberculosis
Osteo-Arthritis
Poker Spine
5. What is the relation of the present disease to a precedent injury? e.g.,
Bone—Tuberculosis, Osteo-Arthritis, Herniated Disc.
Neural—Cord Tumor, Disseminated Sclerosis, Progressive Muscular Atrophy.

Conclusion

It is suggested that in assessing compensation for injury of the back, the factors involved be classified as follows:

Organic—Skeletal, Muscular, Neural.

Functional—Fear, Hysteria.

Simulated—Malingering.

I trust that nothing said in this paper has given the impression that the human back is a weak or fragile structure. On the contrary, for all its intricate design, it is a very robust and durable mechanism, largely capable of repairing its own mishaps. Indeed, it may be said that, barring accidents and disease, and given reasonable care, it should last a lifetime. What more can one ask?

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Medical Travelogue

The Second International Congress of Allergy

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Division of Medicine

Winnipeg Clinic, February, 1956

The International Society of Allergology, which is composed of National allergy societies, held its first international Congress in Zurich, Switzerland in 1951. The second Congress was held in Quitandinha, a mountain resort near Rio de Janeiro, from the 6th to the 13th of November, 1955. The Brazilian Allergy Society in conjunction with the Brazilian Medical Association made all local arrangements, and were sponsored and assisted by the Government of Brazil. The President of the International Society of Allergology, Dr. Fred W. Wittich of Minneapolis, was presiding officer. Dr. E. Brum Negreiros of Rio de Janeiro was President of the organizing committee. Dr. Bram Rose of Montreal and the writer were the official delegates from Canada and were the only allergists present from this country.

International Congresses are now popular in many branches of medicine. There can be little doubt that they do a great deal of good in advancing medical knowledge throughout the world. Distance, of course, limits the attendance from any one country, but those who do attend are often the leaders in their respective fields, and the resultant personal intercommunication is of great value. There is a great tendency for medical knowledge to become limited to national and continental boundaries and this is due, not only to the language barrier, but to other factors such as habit and the natural human tendency to distrust or ignore ideas which originate from far countries.

My round trip was over 15,000 miles and seemed a very great distance. Yet many others travelled much longer distances as, for example, the delegations from Japan and Australia. Those coming from Europe and Africa had somewhat shorter trips. Brazil proved to be a valuable locale for the Congress, because it permitted a large attendance from the Latin American countries where medicine is undergoing a great renaissance. Many countries, no doubt, valued the soft currency situation in Brazil. Rio is well served with many airlines as well as good ocean travel. The city itself is as lovely as it is described. I doubt if any more beautiful city exists, and the weather is superb in all seasons. Quitandinha is a large mountain chalet originally built as a gambling casino and mountain resort near the old summer palace of Dom Pedro II, last Emperor of Brazil. It is huge and accommodated the whole Congress with ease. A dining room seating 1,000, a large,

fully equipped theatre, night clubs, a swimming pool, a wax museum rivalling Madame Tussaud's, numerous bars, lounges, salons for meetings, etc., all under one roof made it an almost ideal place for a large meeting. Situated in the coastal range of mountains at 3,000 feet, the weather is cool, and the easy access to Rio over a superb 60-mile highway completed a nearly perfect arrangement.

The Canadian Ambassador, Mr. Sydney Pierce, held a reception for the two Canadian delegates at which we met many of the diplomatic and business notables of Rio. Later all the official delegates were entertained at a reception at the Spanish Embassy.

It is difficult to describe a meeting of this kind in professional terms. Some 26 countries were represented from all parts of the globe and both sides of the Iron Curtain. The attendance exceeded 400 doctors from countries other than Brazil. Over 200 scientific papers were presented. The Congress was divided into several sections, and there were several specially arranged symposia. There were four official languages, Portuguese, Spanish, French and English. In the symposia an instantaneous translation service was provided. The speakers usually spoke in their native tongue, and the delegates used ear phones plugged into the appropriate channel for them. The interpreters sat in enclosed areas at the back of the stage behind large windows and were recruited from the professional United Nations interpretation staff. The results were excellent and fell down only occasionally when the lecturer spoke too rapidly. It was amusing at times to see and hear an interpreter admonish a speaker. The many simultaneous sectional meetings did not lend themselves to an interpretation service, but those speakers who used good slides were usually understood. The organizing committee also provided us with a bound volume of abstracts of all papers. The writer had the unique experience of presiding one afternoon at a section in which all but one paper was given in Portuguese or Spanish. His high title of "Presidente," instead of chairman, seemed to be important to the Latin Americans, and luckily he had a charming Brazilian "Vice-Presidente" sitting beside him to help. Most Latin-American physicians speak English with some fluency and some had taken special English lessons before the meeting. One wonders, if we had been hosts, whether we would have been so considerate of our guests. The symposia included such titles as Dermatological Allergy, Histamine, Asthma, Immunology and Allergy, Allergy and Hormones, Therapeutics of Allergy, Drug Allergy, Leprosy and Tuberculosis. The various sections included the following topics: Histamine and the Pathogenesis of the Allergic

Reaction, Drug Allergy, Immunology, Asthma, Dermatology, Allergy and Hormones and Treatment.

The Congress honoured four special guest speakers, Dr. Robert A. Cooke of New York, Professor C. Jimenez Dias of Madrid, Professor M. Roche e Silva of Sao Paulo and Sir Henry Dale of London. The first three gave splendid addresses, but we were all disappointed that Sir Henry Dale was prevented by ill health from coming to Rio. Sir Henry Dale's printed address was circulated to all the delegates. In addition to these world-famous medical scientists, other distinguished physicians and scientists from many countries made specially valuable contributions to the symposia. They included Dr. Louis Schwartz of New York, Professor Bernard Halpern of the Pasteur Institute and, famed for his development of antihistamines, Dr. Hans Storck of Switzerland, Dr. Mary Loveless and Dr. E. A. Kobat of New York, Dr. S. M. Feinberg and Dr. Max Samter of Chicago, Dr. John Sheldon of Ann Arbor, Dr. Erikson-Lihr of Finland, Professor Cesar Frugone and Professor Serafini of Italy, Dr. Moreno of Buenos Aires and Dr. Bram Rose of Montreal. Professor F. E. Rabello of Rio de Janeiro conducted a most remarkable symposium on Leprosy and Tuberculosis.

It is very difficult, if not impossible, to give any useful summary of the scientific presentations in a medical travelogue such as this. A very great deal of clinical and laboratory research is going on, all over the world, on various aspects of the allergic phenomena. Much fundamental work is proceeding in the realm of immunology, endocrinology, and physiology. Great advances have been made since the war in these and related fields, and our knowledge of allergy is now on a much more solid and wide base than formerly. Advances have been so rapid that it is not too much to hope that striking therapeutic advances will soon eventuate. International meetings such as this serve to consolidate and integrate, and permit further advance.

Allergy as a clinical concept has developed from many scientific observations, some of which seem to have been quite unrelated. Sir Henry Dale points out that he has never had the opportunity of studying the conditions included under the general term "Allergy" on its symptomatic manifestations in man, and yet his studies of the actions of histamine over 45 years ago, resulting from his work with Ergot led him to the recognition of the fact that histamine could produce many of the phenomena seen in anaphylaxis and allergy. Later the demonstration by Best et al that histamine was a normal constituent of the protoplasm of all living cells, that it was held in a loose chemical combination and that it could be released by cell injury, such as that caused by the antigen antibody reaction of anaphylaxis and

allergy, indicated a probable explanation of part of the allergic phenomenon. The disciplines of pharmacology, physiology and immunology came together almost accidentally to throw light on a clinical state and to show the way to future valuable research. Such a Congress as this presents a valuable common meeting ground for the many disciplines that are contributing to our understanding of allergy.

Possibly the most important part of the Congress program lay in the fundamental sciences. However, the clinical side had an equally prominent place and much useful work was reported. The writer had the honour of delivering a paper on "Five Years Experience with Hormone Therapy of Asthma in Private Practice." The Congress committee hopes that sufficient funds can be made available so that all the papers presented can be published in one volume of "Proceedings." This is not only costly but very time consuming, and the various contributors have been permitted to publish their papers in various national journals.

The journey to Rio was not only a great professional experience. South America is very much of another world to us in Canada. Brazil is nearly as large as Canada and has 55 million people, mostly Portuguese, but with many other Europeans and a relatively small Indian and Negro population. It is very rich in natural resources and should have a tremendous future. Rio with its 2½ million people, its exquisite setting between the mountains and the sea, its incredible beaches, exciting architecture and warm hospitable people is in itself worth the long trip. Sao Paulo, 400 miles to the south, lying in the mountains, near the sea port of Santos is nearly incredible. A growth from 750,000 to 3½ million people since the war can hardly have been equalled anywhere before. Its bracing climate, its bustling energetic citizens, its forest of sky scrapers and its remarkable supply of power by Canada's famed Brazilian Traction Company, its great Biological Institute and the remarkable snake farm for venom production at Butantan all make a visit by a Canadian memorable indeed.

Pan American Airways provides a splendid air service by its famed Clipper "El Presidente" from New York to Rio in 22 hours. Return by sea on the 33,000-ton Moore McCormack liner, Argentina, provided 12 days of luxurious tropical sailing. Fifteen thousand miles by land, sea and air as far south as the Tropic of Capricorn, from the early winter of Winnipeg to the early summer of the southern hemisphere, seeing something of another world, another culture and partaking of a splendid scientific conference with its opportunities of meeting and knowing many great medical figures from many parts of the world, was an experience of a life time.

The readers of this travelogue will hear much of Brazil in the future and perhaps it is fitting to close by recording that Brazil's new and energetic President is a surgeon, Dr. Juscelino Kubitschek. An excellent account of the man, his new regime and his great country is given in Time magazine, 13 February, 1956.

The third international Congress will be held in Paris in October, 1958 under the presidency of Professor Bernard Halpern. Any doctor who can attend that meeting will find much to interest him.

The Third Congress of the Latin-American Society of Orthopaedics and Traumatology

Mexico City

Alexander Gibson, F.R.C.S. (Eng.)

This Association of Latin-American surgeons meets once in three years. The first meeting was held in 1950 at Montevideo and Buenos Aires under the presidency of Dr. Alberto Inclan of Cuba. The second was convened in 1953 at Rio de Janeiro and Santos. The president was Dr. Oswaldo Campos, a well-known authority on Tuberculosis. In January, 1956, the third Congress was held at Mexico City. The president was Dr. Alejandro Velasco Zimbron, a man of boundless effervescent energy. No trouble was considered too much to make this a memorable meeting. Invitations to attend were accepted by surgeons in all the Latin-American countries, and by others whose Latin-American affiliations were not quite so obvious, such as England, Germany and Japan. Canada was represented by three French-speaking surgeons from Montreal, one from Ottawa, and two English-speaking from Sudbury and Winnipeg respectively. All the Canadians contributed to the Proceedings of the Congress.

International gatherings, while theoretically beneficial, are, as a rule only moderately successful. With the best goodwill in the world, it is difficult for two people of different tongues to develop a firm and abiding friendship. The dominant language in Latin-America is Spanish, (Portuguese in Brazil) but many of the Latin Surgeons have had training in the United States of America, and they speak and understand English very well. The actual proceedings at the Congress were readily followed, as ear-phones were provided by which an excellent translation into English kept pace with the speaker. A fairly large contingent of surgeons was present from the U.S.A. Their papers—delivered in English—were interpreted in Spanish to non-English-speaking members.

The programme included a number of Symposia on such subjects as "Perthes' Disease," "Flat-foot," "Treatment of Fractures of the Forearm," "Fractures about the Knee." Numerous papers were

given on every aspect of orthopaedic and traumatic surgery from "Necrosis of the head of the femur" to "Spastic paralysis" and "Scoliosis." Most of the papers were of high quality. There were audio-visual presentations and scientific and commercial exhibits. Work commenced at 8 a.m. and went on with about two hours of intermission until after 6 p.m.

The meetings were held at University City, a new development of breath-taking proportions built on an extensive lava bed known as the Pedregal some ten miles from the centre of the City. The university campus covers several square miles. The buildings are the last word in modern architecture, many of them covered with mosaic and murals in eye-catching colours and designs.

The university buildings include a colossal swimming-pool, and a stadium capable of seating over 100,000 people. The student enrolment is expected to be in the neighborhood of 35,000.

In all national or international meetings, the social aspect is of prime importance. To us who live in a cold northern climate, the events were, to say the least, unusual, especially in the month of January. After the formal opening of the Congress by the President of the Republic of Mexico there was horse-racing at the Hippodrome, followed by a cocktail party at the home of the president of the Congress, Dr. Zimbron. Sunday is the day of the week when all minds turn to the bull-fights. These—said to be the only events in Mexico that are always punctual to the minute—commence at 4 p.m. and go on till after 6 p.m. As a rule, six bulls are killed. The arena seats 50,000 persons, and, as far as one could make out, not a seat was vacant. Cries of "Olé" greeted an unusually graceful or skilful manoeuvre, while poor performance called forth cries of derision and seat cushions were hurled into the arena. The successful bull-fighter is a popular idol, usually winning wealth and prestige. The spectacle does not appeal to our non-Latin minds but—as we raise our eyebrows—do not our own feet stand at times on slippery places? Among other extra-curricular activities were a display of horsemanship, an organ recital and a game of Jai-Alai; a dinner and dance wound up the proceedings of the Congress. For the ladies of the party there were excursions each day to places of interest in the vicinity, not the least interesting of which was a visit to the homes of several of the wealthier Mexicans.

With Mexico City as a centre, it is easy to engage in excursions of a day or longer. While the City itself provides unlimited interest in the fields of history, archaeology, architecture and economics, there are within moderate distance an abundance of attractions. The main highways of Mexico are magnificent and the scenery superb. One can visit Puebla with its Talavera tiles, Cuernavaca an inland elysium, Xochimilco with its

garlanded "chinampas" on the canals of the floating gardens. Taxco, a fantastic town perched high on crags, with cobble-stoned streets and a world-renowned silver industry is like a page from a fairy-tale. On the west coast there is Acapulco, formerly a centre of trade with the Orient, and now a winter paradise with splendid hotels, sandy beaches, surf-bathing, and perhaps the finest deep-sea fishing on the Pacific coast. At Guadalupe, a few miles from the city itself is the famous shrine of the Virgin of Guadalupe, the Mecca of all mid-American Catholics; and everywhere there are the markets where the peasants bring for sale poultry, leather-work, basket-work, fruit, vegetables, hats, toys, eatables, everything one can think of.

A visit to Mexico forces one to revise preconceived ideas. Among other influences the tourist agencies have taught us that the key-word in Mexico is "Manana", tomorrow, and its physical counterpart lassitude. This is far from being true.

The industry of the peon whether in roadmaking, building, working in the fields of sugar-cane or coffee or cultivating his little patch of land is prodigious. The artistry of the people is evident everywhere, in sculpture, in painting or in music. This is no nation of "has-beens", it is a virile, accomplished, forward-looking people.

Medical Place Names in Manitoba

Dr. G. H. Hamlin, Portage la Prairie, has called attention to the fact that Capt. Harry Marantz, R.C.A.M.C., is commemorated by a lake of that name south-east of Churchill.

Dr. Marantz graduated from the Faculty of Medicine, University of Manitoba in 1931 and was killed in action in France, August 15, 1944, in front of his first-aid post. Before going overseas he practised for eight years at Flin Flon.

Ross Mitchell.

Obituary

Dr. Campbell McIntyre

Dr. Campbell M. McIntyre, 62, assistant medical superintendent of Selkirk Mental Hospital died on February 28 at Winnipeg General Hospital. He was a member of the Canadian and American Psychiatric associations and an active member of the Canadian, Manitoba and Winnipeg Medical Associations.

Born in Winnipeg, he was educated in the public schools, St. John's College, Brandon College and McMaster University. He graduated in medicine from University of Manitoba in 1927, spent two years on a fellowship in surgery at the Crile Clinic in Cleveland and on his return took up duties at Selkirk Mental Hospital.

At Selkirk he took an active part in the life of the community. He is survived by his wife, a son and a brother.

Dr. T. W. Brokovski

Dr. T. W. Brokovski, 39, died on February 20. A native of Winnipeg, he was educated at St. John's and St. Paul's College, and graduated in

medicine from the University of Wales at Cardiff in 1942. He took part in D-day operations, was wounded at Caen and retired with the rank of Captain. For a time he practised at LaFleche, Sask. He is survived by his widow and a daughter.

Dr. Frank Kidd Purdie

Dr. Frank K. Purdie died at his home in Griswold on March 11, aged 69. He served overseas in the first World War with No. 2 Canadian General Hospital at LeTreport and graduated in medicine from Manitoba Medical College in 1916. For two years he was assistant superintendent of Brandon Mental Hospital, then moved to Griswold where he practised for 38 years. In 1942-43 he was president of the Manitoba Medical Association and in 1951 president of the College of Physicians and Surgeons of Manitoba. He was Medical Health Officer for the Municipality of Whitehead and had a part-time position with the Department of Indian Affairs.

He is survived by his widow and two sons, Dr. F. Purdie and Dr. J. Purdie of Brandon.

Editorial

S. Veisrub, M.D., M.R.C.P. (Lond.), F.R.C.P. (C.), F.A.C.P., Editor

Prophylaxis in Rheumatic Fever

The term Prophylaxis, derived from a Greek word meaning caution, has been used by physicians as early as the sixteenth century to designate the aspects of Medicine which deals with prevention. Preventive Medicine has since grown to gigantic proportions, encompassing the fields of epidemic diseases, nutritional deficiencies and industrial hazards, in all of which it has established a glorious record.

Rheumatic fever has been somewhat slow in entering the arena of preventive medicine. A late arrival, it brought with it a long history of etiologic and pathologic research. As far back as 1907 Shick suggested that rheumatic fever may be a late reaction due to altered sensitivity to the streptococcus. Subsequent researches tended to confirm the antigen-antibody type of response, even though the exact mechanism whereby it is produced is not too clearly understood. The sequence of an acute illness due to beta streptococcus hemolyticus, a latent period of one or more weeks, and the development of rheumatic fever, has been observed too often to leave any doubt as to the relationship of the latter to the streptococcal infection. Yet, despite this knowledge, defense against rheumatic fever was late in developing. This failure of prophylaxis to keep pace with the knowledge of etiology was largely due to the fact that no effective means were available to deal with streptococcal infection, either prophylactically or therapeutically, before the era of sulfonamides and penicillin.

The first hesitant steps in the direction of prophylaxis of rheumatic fever were made after the discovery of the sulphonamides. Thomas and his associates (J.A.M.A., 116: 55, 1941) were the first to use sulphanilamide prophylactically in patients susceptible to recurrences of the disease. The same drug was used successfully by Kuttner and Ryerbasch (J. Clin. Invest., 22: 17, 1943). Coburn (J.A.M.A.) 126: 88, 1944) reported satisfactory results from the prophylactic use of sulphadiazine in doses of 0.5 to 1 grams daily throughout the year. By preventing streptococcal infection, the sulphonamides have sharply reduced the incidence of recurrence of rheumatic fever in susceptible patients.

Although the results of the above investigations were encouraging, they also revealed that the method had limitations. Toxicity of the sulphonamides, and development of resistant strains of streptococci narrowed down their range of usefulness. Moreover, since mass prophylaxis was not practical, the use of sulfonamides could be aimed

at prevention of recurrence rather than occurrence of rheumatic fever—a praiseworthy, but somewhat limited, objective.

The picture changed radically with the advent of penicillin. In addition to offering more effective prophylaxis of recurrence with daily oral (Maliner et al, J. Pediat. 35: 145, 1949), and currently more popular monthly parenteral penicillin (Bicillin), one could now attempt to forestall the first attack of rheumatic fever by directly attacking the streptococcal infection which may give rise to it. Various investigators embarked on a campaign of prevention of rheumatic fever through vigorous treatment of the preceding streptococcal infection. Their results were encouraging. Rammelkamp and co-workers (Harrison T. R. Principles of Internal Medicine, 1950) reported an incidence of rheumatic fever in only 0.25% of cases treated adequately with penicillin for streptococcal respiratory infection, as compared with 2.1% in untreated controls. Denny (J.A.M.A., 143: 151, 1950) found only two cases of rheumatic fever in 798 cases of streptococcal infection treated with penicillin, as contrasted with 17 in 804 untreated cases. Wannamaker et al (A.J.M. 10: 673, 1951), Breese (J.A.M.A., 152: 10, 1953) and others have reported similarly gratifying results. Indeed, so promising were the results, that three counties in Ohio have undertaken, in 1950, to carry out this method of prophylaxis in school children as a communal effort under the guidance of the local Heart Association. The latter has assigned a nurse to be stationed in each school in the Youngstown area, where the project was carried out. Every child with a sore throat or fever was sent to the nurse for a throat culture. The nurse also visited the home of any child absent because of a sore throat and took a throat culture in the home. If the culture was found to be positive, the family physician was informed and the family advised to call him immediately. The report of Bunn and Bennett (J.A.M.A., 10: 673, 1951) on their experiences with the Youngstown project makes interesting reading. It can hardly be doubted that this experiment points the way to other communities.

In view of the success of all these investigations and experiments, it comes as no surprise at all that the program of prophylaxis received the endorsement of the Committee on Prevention of Rheumatic Fever appointed by the American Heart Association, (Circulation, 317: 320, 1955). In its official statement, the Committee urges early and adequate treatment of streptococcal infections in all individuals, since at least 3% of untreated cases

develop rheumatic fever. It also recommends continuous prophylaxis against streptococcal infections in all individuals under the age of eighteen who have had rheumatic fever or chorea, and all those over this age who have had an attack within five years. It states that prophylaxis should begin at the end of the second week of the attack of rheumatic fever, or any time thereafter when the patient is first seen; that it should be preceded by the eradication of beta hemolytic streptococci in the throat, and should be continued uninterruptedly until the age of eighteen in children and for at least five years after the last attack in adults. The committee also gives detailed recommendations as to drugs and dosage. Prophylaxis of rheumatic fever has come of age!

It should not be thought, however, that the control of rheumatic fever either by an organized communal effort, or by that of an individual physician is a simple and easy matter. The former

requires an intensive program of education of the public and the profession, as well as the establishment of close liaison between parents, school nurses, and doctors. The individual physician is faced with the task of making a diagnosis of streptococcal sore throat in the face of the preponderance of sore throats due to other organisms. In typical cases the diagnosis is easy. Fever, red throat, follicular exudates, and cervical adenitis are characteristic. In the atypical cases, comprising about 25% of the total, clinical recognition may be difficult, and throat cultures may be resorted to in order to establish the diagnosis.

Despite these and other difficulties entailed in the prophylaxis of rheumatic fever, it is well worth pursuing. When it is realized that the only means of prevention of rheumatic heart disease is the prevention of rheumatic fever, it can be appreciated that no effort is too great, if it leads to the attainment of this goal.

Letter to The Editor

Dear Editor:

Two comments I would like to make on the article *Epidemiology of Infectious Hepatitis* by S. S. are as follows:

1. In regard to the normal levels of icterus index—normal range varies between 4-6 units provided that the test is done with acetone to precipitate out the serum proteins. These carry some of the pigment down with them and hence give lower values. However it is more usual to use the water or saline diluent technique, in which case normal upper limit is 9 units. As this method is the one in common use it should be clearly stated that there are these differences in normal values depending on local technique. (Ref.:—Sunderman and Boerner. *Normal Values in Clinical Medicine*, W. B. Saunders, Philadelphia and London. 1949, P. 266.)

2. In regard to the use of methylene blue as a screening test for bile in the urine, it has been conclusively shown now that what one is measuring is the yellowness of the urine. Any blue solution will do, and it is merely a question of adding enough blue to overcome the green addition product of the two colors until the blue predominates. This is obviously too nonspecific to be of much use, and there are simple specific tests available for detecting bile in urine, for example the "Bilitest" tablet as marketed by Ames and Co.

P. T. Green.

Winnipeg Medical Society Report of Nominating Committee For Officers 1956 - 1957

The following report was presented to the Council and accepted by that body on February 17th. Since that time all candidates have agreed to have their names placed on the ballot. The Nominating Committee is pleased to present the following report:

President:

Dr. E. Stephenson, Winnipeg

Vice-President:

Dr. A. R. Gordon, Winnipeg

Dr. R. H. Cooper, Winnipeg

Secretary:

Dr. L. R. Rabson, Winnipeg

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Social News

Reported by K. Borthwick-Lealia, M.D.

In retrospect, of course, you all know the General Practitioners assembled for the Annual Valentine Dinner and Dance—about ten days late for St. Valentine's, but still most successful, enjoyable, and from where I sat, packed to the brim with, at least, Valentine "Instincts." Hats off to Jack Swan, who took over in mid stream from Don McIntyre (holidaying on the Continent) and did a marvelous job of organization. I particularly enjoyed Pres. Edwards trying to outfumble Dr. Hudson and snaffle off his cheque for his Scholarship course, but he didn't get away with that either, which proves that Dr. Hudson is a deservedly acute recipient of the award.

By the way, unless it is announced somewhere else in the Review, the above reference is that Dr. E. D. Hudson, son of Dr. J. E. Hudson, both from Hamiota, Man., was presented with a Scholarship cheque of \$400.00 to be used in P.G. work in Paediatrics (Chicago, I believe), and does he seem to be an admirable choice? Of Course!

The most important announcement for March is that Dr. W. F. Tisdale was elected as Chairman of the M.M.S. succeeding Dr. P. H. T. Thorlakson.

Other members of the executive are Dr. P. H. McNulty, Vice-Chairman; Dr. S. A. Boyd, Secretary; M. Neaman, Treasurer; Dr. J. C. McMaster, Director; Dr. A. Hollenberg, Dr. Donald Hastings, Dr. C. W. Clark, Board of Trustees.

Are congratulations in order for Dr. Tisdale, or is this going to be a large complimentary headache? Whichever, I am sure he will handle the situation. However I cannot resist this, Dr. Tisdale. Is there any similarity between your new office and your well known one as an official in the "Ducks Unlimited"?

Mrs. A. C. Abbott, president of the Women's Committee of the Winnipeg Art Gallery Association, presented the sculptured piece "The Idyll" to the Gallery on behalf of the Committee. "The Idyll" by Professor Cecil Richards, was received with gratitude by the Gallery. Mrs. Abbott was re-elected Chairman at the annual meeting; Mrs. J. J. Lander, Vice-Chairman; Mrs. H. Pickard and Mrs. George Ryan, Members of the Board of Directors.

By the grapevine—friends met our old friend Dr. Harry Lewis, who is now at Nanaimo, B.C. doing a lot of gardening, etc., and a bit of being "Coroner," also apparently happily recovered from a coronary. Thought some of the boys would be interested in our O.C.

The Grads' Farewell, Saturday, March 24th was a grand party at the Royal Alex. Dean Bell proposed the toast to the students, Dr. Julius Singbell replying. Dr. Elmer James, retiring honorary president exchanging sticks with Dr. A. Hollenberg, incoming honorary president. James Knickerbocker takes over from Dr. Singbell and Dr. Beverley Kovacs is the new Lady Stick succeeding Dr. Beverley Hodson.

Drs. Helen Marlatt and Ida Armstrong, with my pal Mrs. J. D. Perrin left last week for our annual winter holiday, except that this year yours

truly stays home to feed young David through his Engineering exams. The tour this year is not to Hawaii but to Georgia by motor. How I would love to be along. Bon Voyage, gals!

Drs. Otto Schmidt and W. Friesen with wives, have just returned from the annual meet in New Orleans, of the "Travelling Society of Gynaecologists and Obstetricians," meetings held in the Charity Hospital, New Orleans. A wonderful, but too hurried holiday reported by all. Apparently, hundreds of Pickaninnies are born per week. Gee, they must be cute.

Margaret Hillsman has arrived from Mount Holyoke College, South Hadley, Mass., to spend Easter with her parents, Dr. and Mrs. J. A. Hillsman. John tells me he is now doing research work on what happens to a new convertible while father drives a "puddle jumper." Statistics available later.

Mr. and Mrs. A. C. McNamara, Norfolk, Virginia, announce the engagement of Mr. McNamara's daughter, Beverley Rose, to Dr. Thomas E. Cuddy, son of Mr. and Mrs. A. L. Cuddy, Sanford, Man. The wedding will take place April 14th, at 2 p.m., in Sanford United Church.

Dr. John R. S. Shields, Director of Anaesthesiology at the Children's Hospital and U. of M. has been appointed Assistant Professor of Anaesthesiology in the Department of Surgery at Washington School of Medicine, St. Louis, Mo.

And to the Babes—Hi!

Dr. and Mrs. T. W. Fyles, a son, March 18th, 1956.

Dr. and Mrs. E. C. Shaw (nee Margaret Munro) announce the arrival of Janet Catherine on St. Patrick's Day. Happy wearing o' the green.

Dr. and Mrs. David Robertson, a daughter, Jennifer Lynne, in Toronto, March 6th.

Dr. and Mrs. F. A. Herbert happily announce the arrival of Elizabeth Anne, February 28th, 1956.

Dr. and Mrs. Danell Osborne, Kamloops, B.C. announce the birth of Randall Sherman, March 4th, Jr. brother for Marilyn, Laurel, Campbell and James. Wow, what that western climate does for our boys.

Dr. and Mrs. Harold Swanson welcome one, Bruce Gordon, March 19th, 1956.

Drs. Morley and Nancy Sirett, Erickson, Man., are so pleased with a new son, Duncan Harry, March 8th, 1956.

Dr. and Mrs. Jan Hoogstraten announce the arrival of Anne Nixon, March 26, 1956. Quote, "A beautiful girl, chuck full of sex appeal." That is, I believe, two pairs Jan—what about a "full house" next year?

Dr. and Mrs. Hugh Johnston, Moose Jaw, Sask., announce the birth of Diane Meredith, baby sister for Gregory.

Mr. and Mrs. A. J. Yaremovitch (nee Dr. Leonora Hawirko) proudly announce the birth of their daughter, Patricia Linda, on March 17th.

Children's Hospital Winnipeg, Man.

Re: Ward Rounds and Clinical Conferences

1. Weekly Grand Round 11-12 a.m. Thursday mornings throughout the year.
2. Medical Staff Clinical Luncheon, the first Friday of each month (except July and August), 12.30 to 2 p.m.
3. Special Tuesday noon conferences 12 to 1, First Tuesday of the month, Therapeutics, (Dr. Nickerson).
Second Tuesday, X-ray Diagnosis, (Dr. Childe).
Third Tuesday, Cardiac Conferences, (Drs. Ferguson, Medovy, Armstrong, etc.).

All these meetings take place in the Playroom at the East end of the first floor.

The members of the Medical profession are invited to attend these Conferences and Ward Rounds.

Physicians' Art Salon

The Physicians' Art Salon Committee invites any Canadian physician or medical undergraduate to enter his work in the 1956 Salon to be held in the Chateau Frontenac, Quebec City, from June 11th to the 15th. This will mark the 12th year for this popular art and photographic feature of the annual C.M.A. Convention. It is sponsored by Frank W. Horner Limited, Montreal.

Conditions of Entry

The Salon structure will remain the same as last year. Entries will be accepted in three sections:

- 1) Fine Art
- 2) Monochrome Photography
- 3) Color Photography

The Fine Art Section is further subdivided into traditional, contemporary (modern), and portrait categories. There is no restriction on media, oil, tempera, gouache, water colour, charcoal, pencil, or dry brush are acceptable in each.

In Monochrome Photography, four entries may be submitted, but each exhibitor is limited to three entries in Fine Art, and Colour Transparencies. And any exhibitor may enter up to the limit in one or more sections.

There is no charge. All costs, including transportation to and from Quebec City will be borne by Frank W. Horner Limited.

Judging of Awards

All acceptable entries will be displayed in the Salon and then judged for awards by a competent jury to be selected by the Art Salon Committee.

To Obtain Entry Forms

Any physician or medical undergraduate interested in submitting work may obtain an entry form with details by writing the sponsor at P.O. Box 959, Montreal. A short note or postcard will do. The entry form contains complete instructions on how to prepare and ship the entries.

Art Salon Calendar

A novel by-product of the Salon, the Physicians' Art Salon Calendar, will be prepared by Frank W. Horner Limited. The Calendar reproduces award-winning work in full colour, and is distributed to all the physicians in Canada, with the compliments of the Company.



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Department of Health and Public Welfare
Comparisons Communicable Diseases — Manitoba (Whites and Indians)

DISEASES	1955		1954		Total	
	Jan. 29 to Feb. 25, '56	Jan. 1 to Jan. 28, '56	Jan. 30 to Feb. 26, '55	Jan. 1 to Jan. 29, '55	Jan. 1 to Feb. 25, '56	Jan. 1 to Feb. 26, '55
Anterior Poliomyelitis	0	1	1	0	1	1
Chickenpox	126	84	203	157	210	360
Diphtheria	0	0	0	1	0	1
Diarrhoea and Enteritis, under 1 year	15	4	6	2	19	8
Diphtheria Carriers	0	0	2	0	0	2
Dysentery—Amoebic	0	0	0	0	0	0
Dysentery—Bacillary	3	1	0	1	4	1
Erysipelas	1	3	2	0	4	2
Encephalitis	0	0	0	0	0	0
Influenza	14	5	2	6	19	8
Measles	256	138	606	251	394	857
Measles—German	36	5	8	4	41	12
Meningococcal Meningitis	1	1	3	2	2	5
Mumps	171	112	214	114	283	328
Ophthalmia Neonatorum	0	0	1	0	0	1
Puerperal Fever	1	0	0	0	1	0
Scarlet Fever	18	18	30	23	36	53
Septic Sore Throat	4	0	6	0	4	6
Smallpox	0	0	0	0	0	0
Tetanus	0	0	0	0	0	0
Trachoma	0	0	0	0	0	0
Tuberculosis	30	15	31	16	45	47
Typhoid Fever	0	0	0	0	0	0
Typhoid Paratyphoid	0	1	0	0	1	0
Typhoid Carriers	0	0	0	0	0	0
Undulant Fever	1	0	0	0	1	0
Whooping Cough	36	9	92	63	45	155
Gonorrhoea	106	99	93	80	205	173
Syphilis	7	3	19	4	10	23
Jaundice Infectious	33	12	45	23	45	68

Four-Week Period January 29th to February 25th, 1956

DEATHS FROM REPORTABLE DISEASES
February, 1956

Urban—Cancer, 67; Pneumonia, Lobar (490), 6; Pneumonia (other forms), 12; Syphilis, 2; Tuberculosis, 3. Other deaths under 1 year, 18. Other deaths over 1 year, 199. Stillbirths, 14. Total, 321.

Rural—Cancer, 21; Measles, 1; Pneumonia, Lobar (490), 1; Pneumonia (other forms), 8; Tuberculosis, 3; Hydatid Disease, 1. Other deaths under 1 year, 12. Other deaths over 1 year, 182. Stillbirths, 6. Total, 235.

Indians—Measles, 1; Pneumonia, Lobar (490), 1; Pneumonia (other forms), 3; Syphilis, 1. Other deaths under 1 year, 0. Other deaths over 1 year, 5. Stillbirths, 2. Total, 13.

Very little comment seems necessary for the four weeks ending February 25th, 1956.

Chickenpox, Measles and Mumps show their usual fairly high incidence at this time of year.

Infectious Jaundice continues to be troublesome.

Gonorrhoea shows a slight increase. Early diagnosis, prompt thorough treatment and discovery and treatment of contacts, plus reporting are the keys to prevention and control of spread of this disease.

Rabies in Animals is much more prevalent than we care to see. Fortunately, although several humans have been bitten none have developed the disease to date. All animal bites should be carefully treated and sterilized with antiseptics. If there is any suspicion that the animal is rabid it should be safely secured and the incident reported to the local Health Officer and by him to the Health of Animals Division of the Federal Department of Agriculture, Dominion Public Building, Winnipeg.

DISEASES	*449,000 Manitoba	*861,000 Saskatchewan	*2,925,000 Ontario	*2,952,000 Minnesota
(White Cases Only)				
*Approximate population.				
Anterior Poliomyelitis	1	—	1	1
Chickenpox	126	7	2275	—
Diarrhoea & Enteritis, under 1 yr.	15	9	—	—
Diphtheria	—	—	—	3
Diphtheria Carriers	—	—	—	—
Dysentery—Amoebic	—	—	—	—
Dysentery—Bacillary	3	—	—	5
Encephalitis, Infectious	—	—	—	—
Erysipelas	1	1	3	—
Influenza	14	—	48	5
Jaundice, Infectious	33	102	70	46
Measles	256	51	3793	44
German Measles	36	3	1216	—
Meningitis Meningococcus	1	—	5	5
Mumps	171	4	1985	—
Ophthal. Neonat.	—	—	—	—
Puerperal Fever	1	—	—	—
Scarlet Fever	18	4	656	170
Septic Sore Throat	4	1	7	68
Smallpox	—	—	—	—
Tetanus	—	1	—	—
Trachoma	—	—	—	—
Tuberculosis	30	26	84	109
Typhoid Fever	—	1	4	13
Typh. Para-Typhoid	—	—	—	—
Typhoid Carriers	—	—	—	—
Undulant Fever	1	1	3	7
Whooping Cough	36	26	126	13
Gonorrhoea	106	—	152	—
Syphilis	7	—	19	—

†Statistics for one week only.

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